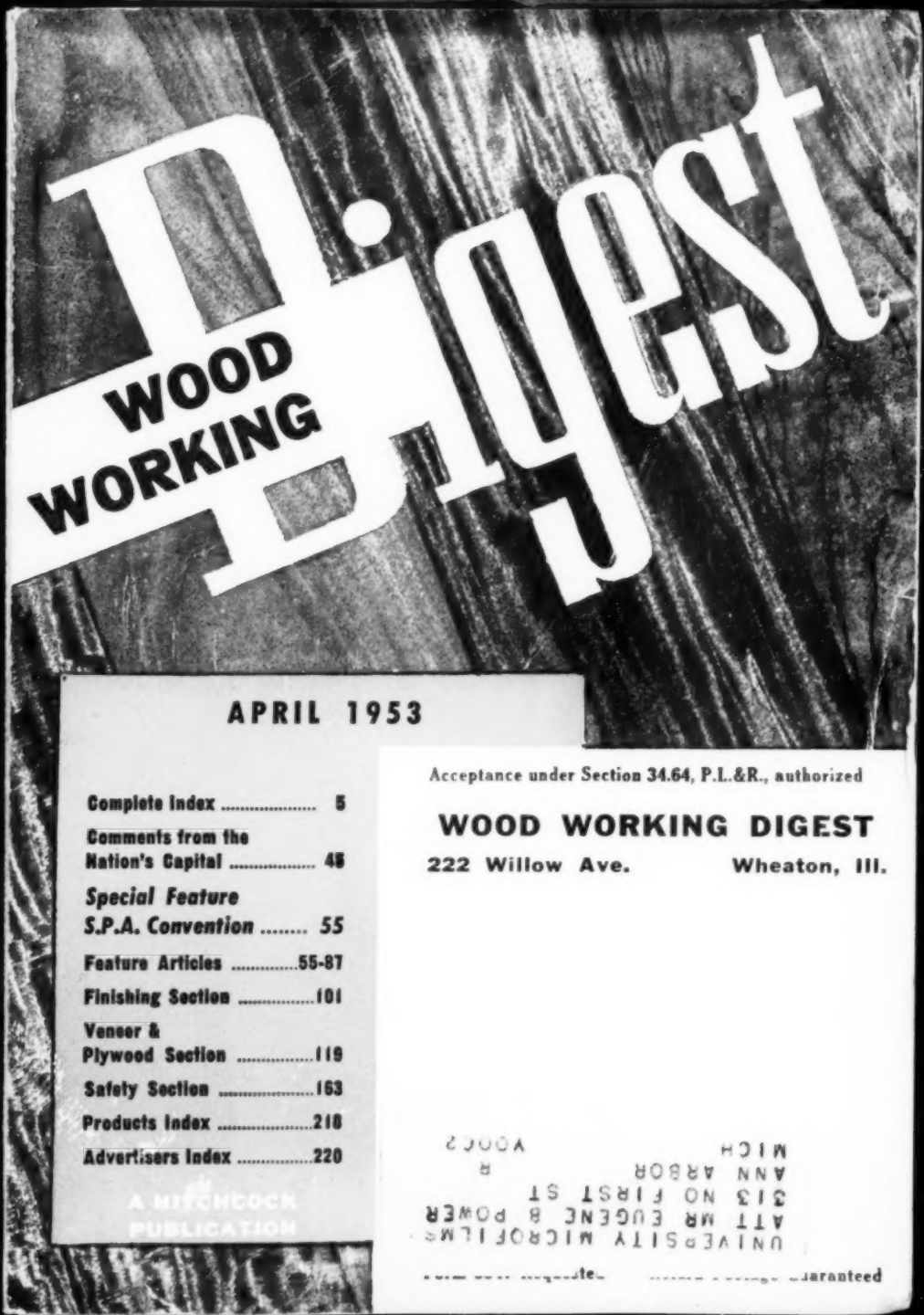

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A HITCHCOCK PUBLICATION

Acceptance under Section 34.64, P.L.&R., authorized

WOOD WORKING DIGEST

222 Willow Ave. Wheaton, Ill.

UNIVERSITY MICROFILMS
ATT MR EUGENE B POWER
313 NO FIRST ST
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...te... ...aranteed

SPEED and HOLDING POWER

WRITE FOR COMPLETE DETAILS

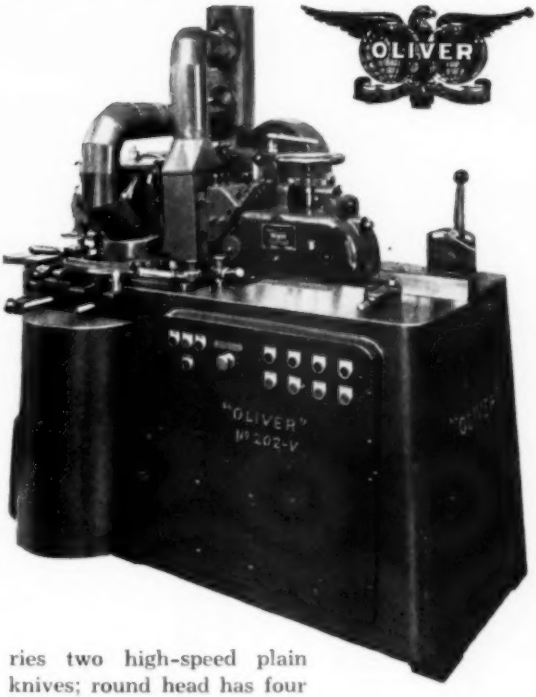
The new **SPOTNAILER** speeds production of case backs and a thousand other soft or hardwood nailing jobs. Bigger magazine requires less frequent re-loading. New driving mechanism assures long, dependable service. Let us show you how much better, faster and cheaper your products can be nailed with Spotnailers.

SPOTNAILS, INC.

EVANSTON 1, ILLINOIS

Now . . . "OLIVER"
High Speed 4-inch Moulder

Cuts up to 120 feet a minute of extra smooth mouldings



• This compact 4-in. Moulder is easy to set up and operate to give you maximum production. High-speed cutterheads give a smoother finish. Cuts delicate mouldings without crushing the fibers.

• Chain drive feed is powered by 1½-h.p. motor with Reeves Vari-Speed Motor Pulley. Standard feeds are 20 to 80 feet a minute; by changing the size of the flat pulley, 30 to 120 feet a minute.

• Cutterheads are driven by V-belts at 7200-r.p.m. (5400 or 3600 if desired). Rigid spindle design of 1¼-in. diameter. Each spindle fitted with quick-acting brake.

• Moulder is offered with square or round cutterheads, with or without self-centering collets. Square head carries two high-speed plain knives; round head has four thin knives. Each spindle is driven by a separate motor.

• All five motors have full magnetic control. Each motor has start and stop button. Feed motor has forward, reverse, run, jog and stop buttons. A large button stops entire machine.

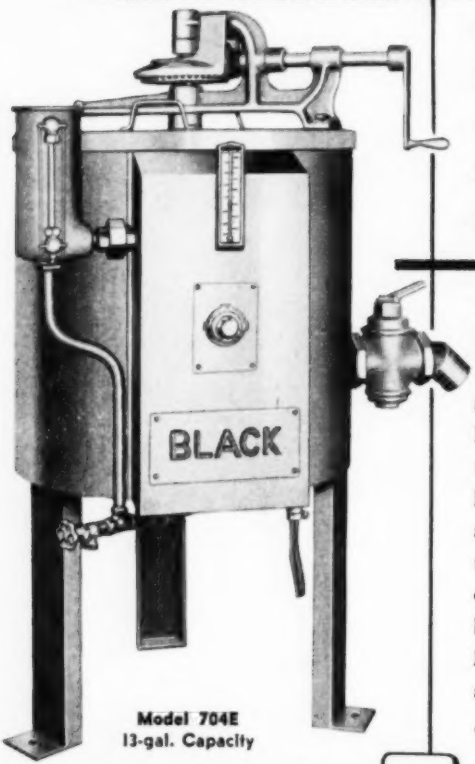
For full details ask for Bulletin No. 202

OLIVER MACHINERY COMPANY

Established 1890 **GRAND RAPIDS 2, MICHIGAN**

GLUE HEATERS

by Black Brothers



Model 704E
13-gal. Capacity

In addition to the Series 700, Blacks have a complete line of simple glue heaters, continuous glue preparers, portable pot glue heaters, and contact heaters.

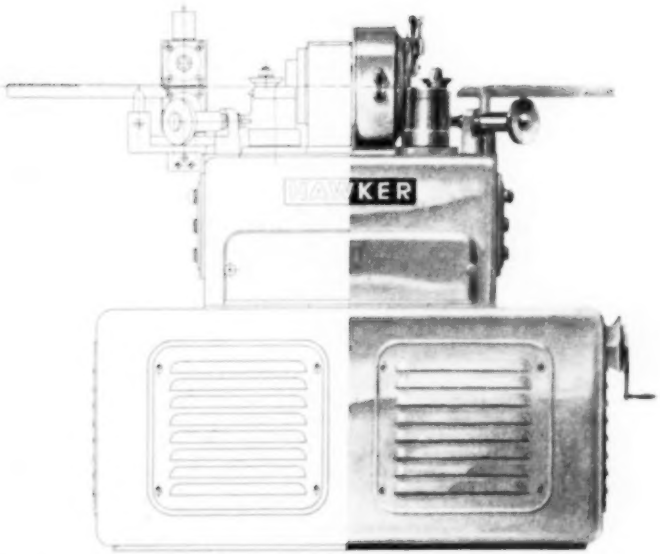
FOR THE PREPARATION OF GLUES AND SIMILAR MATERIALS REQUIRING HEAT

Available in a complete range of sizes from 2½ to 125 gallons or larger, Black's Series 700 Heaters can be arranged for steam, electric or gas heat. They are of the water jacketed type and doubly insulated against heat loss. The liquid heating medium allows rapid and controlled heat transfer — without danger of localized over-heating. Corrosion resistant, boiler-like construction — will last a life time. Either power or hand stirrers available.

"If it is glue room equipment — we have it"

Write for Bulletin 11-H Today!

THE BLACK BROTHERS CO., INC., Mendota, Illinois, U. S. A.



the model 1000 HAWKER

WOOD & PLASTICS TURNING MACHINE.

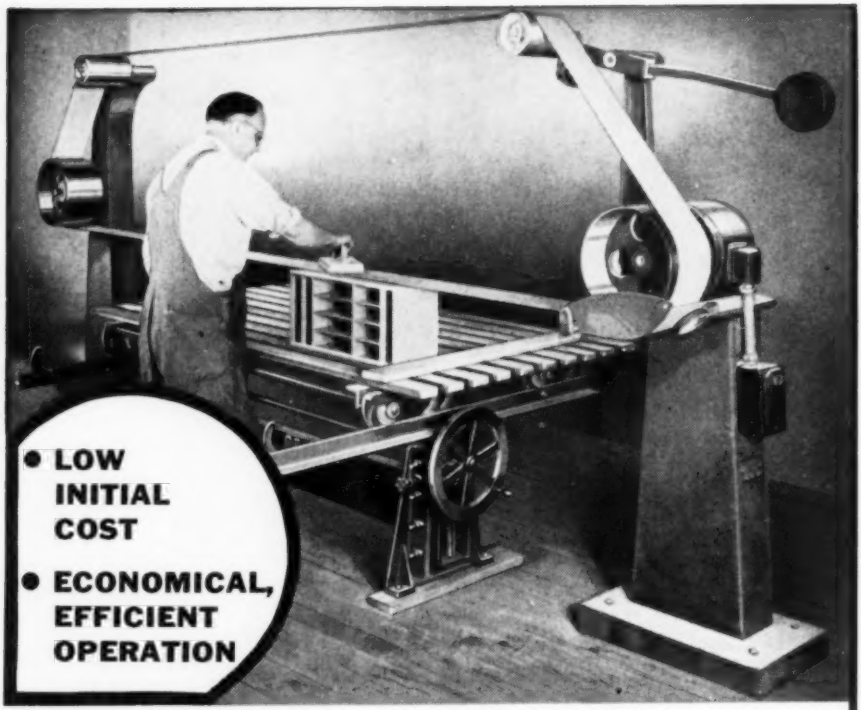
The new Hawker weighs over 2,000 pounds. It is a heavier, sturdier machine tool than ever before. The new drive system for feed rolls and cutterhead means greater operating economy. Lubrication and maintenance needs have been sharply reduced. Variable feed and cutterhead speed control lets you pick the best combination of speeds for the type of stock being run and surface finish quality desired. Drive motors are enclosed within the new, modern base casting.

Limited production of the model 1000 Hawker is under way now in our present plant. The model 1000 will be in full production when our new plant, with 6,500 square feet of floor area, is completed yet this month. For more complete details on costs and delivery, write us today.

HAWKER MANUFACTURING CO.

1425 KEOWEE STREET, DAYTON 4, OHIO

MACHINES FOR THE NEW AGE OF WOOD



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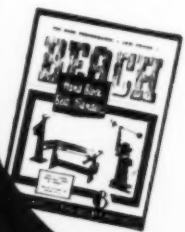

BEACH

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MONTROSE, PA.

Wood Working digest

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DISTRICT MANAGERS

New England and Eastern N. Y. State: Dan E. Reardon, Box No. 1, South Glastonbury, Conn. Telephone: Glastonbury 3-2400

New York, Metropolitan Area: Alvin E. Walles, c/o Hitchcock Pub. Co., 55 W. 42nd St., New York 36, N. Y. Telephone: Lackawana 4-4528 Home Telephone: VErona (N.J.) 8-3072-J

Western N. Y. State, Western Penna.: Ralph E. Helfrick, 1507 Edgefield Rd., Cleveland 24, Ohio. Telephone: Hillcrest 2-0189

Pennsylvania and South Atlantic States: Raymond J. Sietsema, c/o Hitchcock Pub. Co., 55 W. 42nd St., New York 36, N. Y. Telephone: Lackawanna 4-4528

Oregon and Washington: Lloyd Thorpe, Lloyd Thorpe & Associates, 604 Medical Arts Bldg., Seattle 1, Wash. Telephone: MAin 6827

Ohio, Eastern Michigan, Indiana, Kentucky: Henry J. Smith, 3529 Radcliffe Road, Cleveland 21, Ohio. Telephone: EVergreen 2-2520

Middle West, Western Michigan: James C. Stewart, 222 E. Willow Ave., Wheaton, Ill. Telephone: WHeaton 8-3400

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Arkansas, Oklahoma, Texas, Missouri, Memphis, Tennessee: Ned Bailey, 11 Howell Avenue, Eureka Springs, Arkansas. Telephone: Eureka Springs 6751

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ASSURE HIGH SPEED PRODUCTION

BIG CHIEF

The most dependable knife for general purpose high production work.

KNIFE SPECIALISTS SINCE 1891

MOHAWK

Can withstand hard knots in Southern and similar soft woods.

THE WAPAKONETA MACHINE COMPANY

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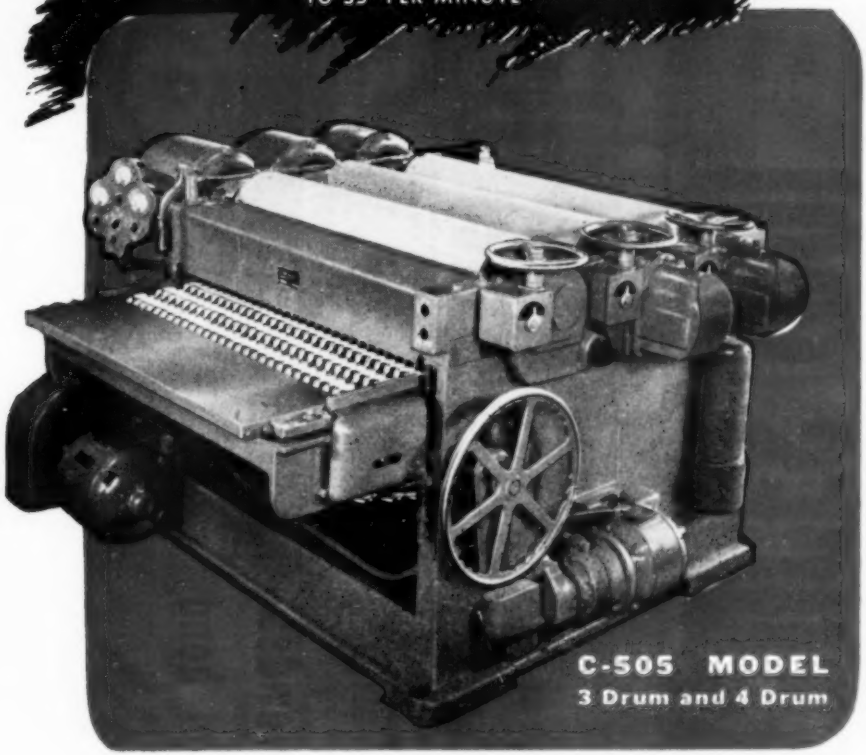
THE SMITH

ENDLESS BED SANDER

WITH SELF-OSCILLATING DRUMS AND VARIABLE SPEED DRIVE, 12' TO 35' PER MINUTE



C-505 MODEL
3 Drum and 4 Drum

The self-oscillating drum (Patent pending) is the greatest improvement in drum sander construction in many years. Eliminates the multi-jointed, old style oscillator, with its bulky cover and separate motor drive. Operator now can get close to the machine for changing paper, etc.

Write today for descriptive literature

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SMITHVILLE, NEW JERSEY

WOOD-LOK® a proven production tool

REDUCES TOOL RE-SHARPENING COSTS

WOOD-LOK* provides an easily machined wood bond

WOOD-LOK is a cold-run, liquid resin adhesive that dries non-abrasive. Its glue film and squeeze-out do not calcify or dry to a rock hard film and act as an abrasive. WOOD-LOK will not dull saws and knives.

You'll Save Money by eliminating the high cost of re-sharpening saws and knives – unnecessarily!

You'll Save Money because tools that dull less frequently—last longer!

and knives – unnecessarily!

You'll Save Money because tools that dull less frequently—last longer!

You'll Make More Money because the production time of your woodworking machinery will not be interrupted unnecessarily – to replace dull saws and knives.

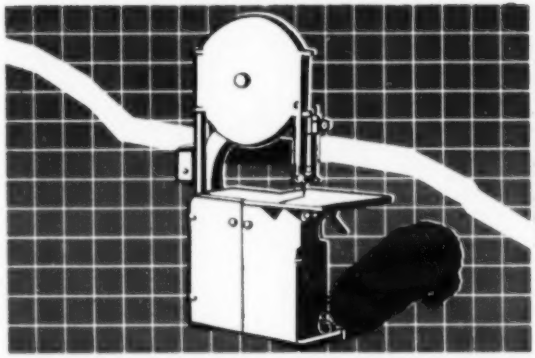
In addition, you'll increase your normal production rate. WOOD-LOK *is a proven production tool.* It was introduced eight years ago to meet the demand for a really high-speed wood glue for joint assembly operations. It has since been scientifically improved to set 25% faster.

So, if you're again cost-conscious – and who isn't – you'll be interested in WOOD-LOK. You'll like its quality and uniformity, too. National's laboratories maintain rigid day-to-day controls over the materials and methods used in its production. And National's technicians stand ready to advise and assist you with specific adhesives problems at any time.

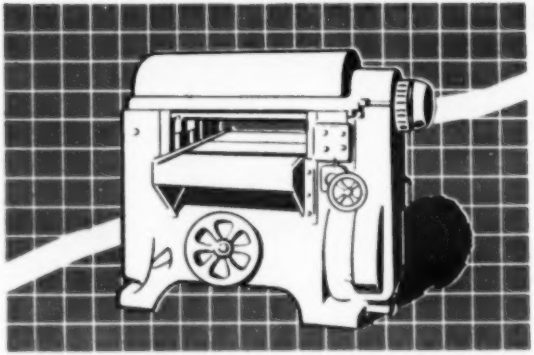
WOOD-LOK samples are available. Address: 270 Madison Avenue, NEW YORK 16; 3641 So. Washtenaw Ave., CHICAGO 32; 735 Battery St., SAN FRANCISCO 11; and other principal cities. In CANADA: National Adhesives (Canada) Ltd., TORONTO and MONTREAL. In ENGLAND: National Adhesives, Ltd., SLOUGH.

*Patent applied for.

For High-speed Production



Decreased Re-sharpening Costs



Increased Production

National ADHESIVES

EVERY TYPE OF ADHESIVE FOR EVERY INDUSTRIAL USE

ACCURATE PRECISION GRINDING

WITH DEPENDABLE'S LOW-COST NO. 106-A

Illustrated with side-head grinding attachment, capacity up to 12" in diameter.

NEW PRECISION GAUGE . . . Equipped with Dependable's G-11 precision gauge. So easy to operate that even an inexperienced operator gets a perfect grind. Set-up takes only a few seconds. Because of accuracy, less knife surface is ground away on expensive knives. Saves you up to 50% of knife replacement costs.

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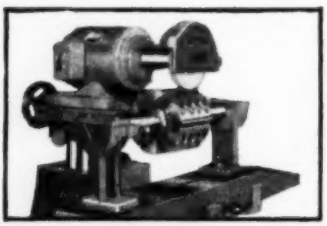
EASY ADJUSTMENTS . . . All adjustments reached from front, while grinding.

RUGGED CONSTRUCTION . . . Extra heavy castings eliminate vibration and give smooth operation.

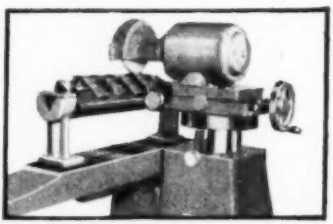
FULL UNIVERSAL . . . Motor base assembly turret mounted to give 360 degree adjustment for straight or hollow grind. Full universal side head stand for grinding knives with any angle.

LOW IN PRICE . . . You'll be pleasantly surprised at the low cost of the Dependable No. 106-A.



MOULDER HEAD ATTACHMENT
For all types of moulder and profiler heads of slip-on type; Up to 12" in diameter and 15" long.

Write for Free Copy of Bulletin C-7 and name of your nearest dealer.



STRAIGHT KNIFE ATTACHMENT
For grinding thick and thin knives up to 20 inches long. Knife plate grooved for quick set-ups.

Dependable MACHINE COMPANY

WOODWORKING MACHINERY

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Black & Decker SCREW DRIVERS

are powered for

faster work, greater accuracy, more dependability!

New No. 8 SCRUGUN*
High-powered, light, compact . . . drives up to No. 8 screws to uniform tightness automatically. Quality built for high production service. Choice of paddle or toggle switch.

Choose from 21 models of Black & Decker Screw Drivers . . . for driving and tightening everything from the smallest screws to ½" diameter nuts. They're all powered by B&D-built universal motors for fast, steady driving. They're light and well-balanced—cut operator fatigue, reduce slippage and marring. Choice of positive or adjustable clutch, 90° angle heads for close quarter work. For dependable performance on all jobs, specify Black & Decker!

See your nearby B&D distributor for demonstrations of these and other time-saving, cost-cutting tools. For free catalog, write: THE BLACK & DECKER MFG. CO., 635 Pennsylvania Ave., Towson 4, Md.

*Trade Mark Reg. U. S. Pat. Off.

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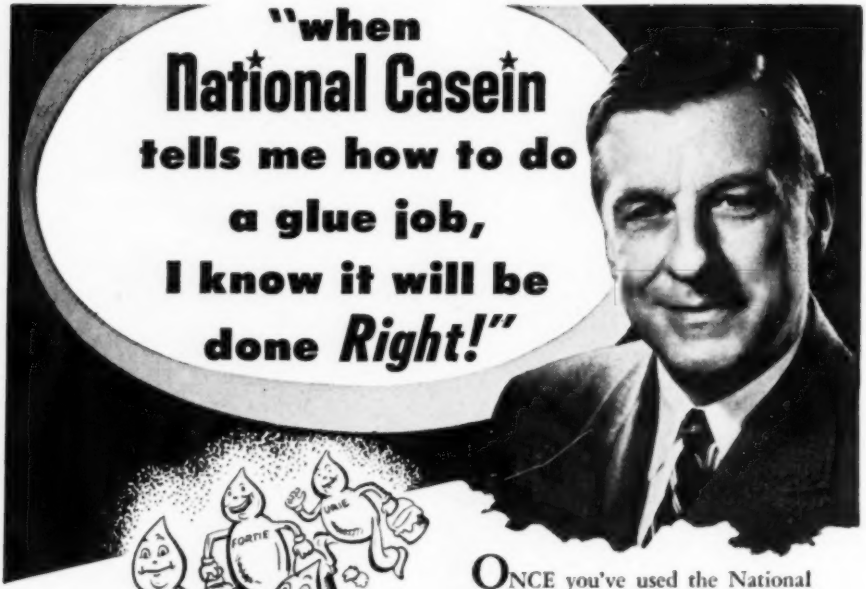
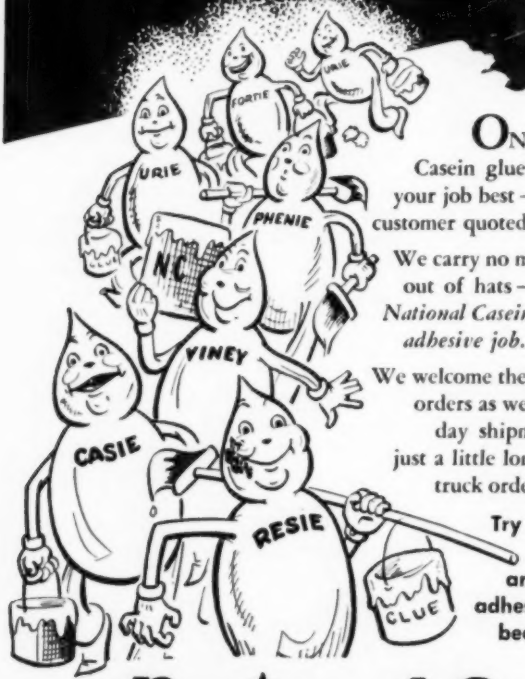
SANDERS
BENCH GRINDERS
SAWS
GLUE POTS

LEADING DISTRIBUTORS EVERYWHERE SELL

B&D Black & Decker PORTABLE ELECTRIC TOOLS

"when National Casein tells me how to do a glue job, I know it will be done *Right!*"





ONCE you've used the National Casein glue formula we tell you will do your job best — you, too, will agree with the customer quoted above.

We carry no magic wands . . . pull no rabbits out of hats — *never tell you that any one National Casein glue formula will do EVERY adhesive job.*

We welcome the tough assignment — for small orders as well as large . . . assure you same-day shipment of nominal quantities — just a little longer for your tank car or tank truck orders.

Try us once — "Casie," "Resie," "Phenie," "Fortie," or any other NATIONAL CASEIN adhesives. You'll stick with them because they *stick* for you.

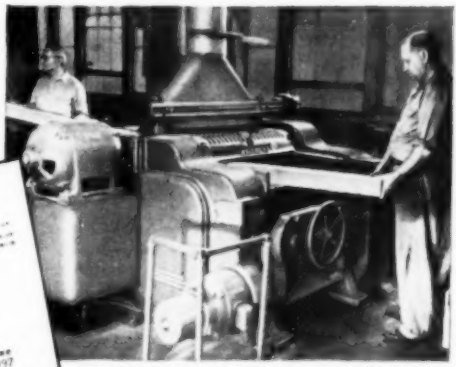
National Casein

601 W. 80th St., Chicago 20, Ill. • **Broad and Fulton Sts., Riverton, N. J.**

WHITNEY 97 Double Surfacer

"In constant use since 1948"

Says F. Speyrer
Plant Supt.
Steinway & Sons



"We are greatly pleased with the smooth performance, the quality of work and the large output of our Whitney 97" says Mr. Speyrer of Steinway & Sons.

STEINWAY & SONS

LONG ISLAND CITY & NEW YORK

February 5, 1953

Baxter D. Whitney & Son, Inc.
Winchendon, Massachusetts

Gentlemen:

At our Riker Avenue Plant in Long Island City, N.Y. we have used, among other Whitney machines, a Whitney #97 Double Surfacer.

This machine has been in constant use since its installment in 1948, and we are greatly pleased with its smooth uniform performance, the quality of work produced and the larger output with a minimum of attention to the machine.

It gives us pleasure to be able to tell you of our satisfaction at having invested in and having such a fine machine at our disposal.

Very truly yours,
STEINWAY & SONS
F. Speyrer
SUPT. PLANT NO. 1

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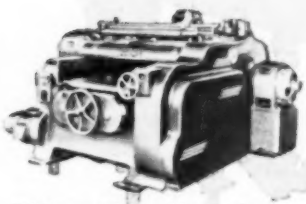

Whitney 97 Double Surfacer

In Our 116th Year

Leaders of the woodworking industry and makers of the finest products in their respective fields have learned to rely on the smooth performance and dependability of Whitney Single and Double Surface Planers to set the high standards of quality for which their products are known thruout the world. They have discovered in Whitney Planers those qualities of craftsmanship and precision that mean highest performance at the lowest production costs.

You can join the long list of satisfied users of Whitney Quality planers and enjoy the very best in planer performance. Send for complete details of the Whitney No. 97 Double Surfacer and Whitney Single Planers. Ask for planer bulletin D.

Planer Specialists for more than 100 years

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WINCHENDON, MASSACHUSETTS, U. S. A.

PLANERS • SHAPERS • VARIETY SAWS • MORTISERS • BACK KNIFE LATHES

CALIFORNIA REDWOOD

...*boon to woodworkers!*

TO IMPROVE their products and cut operating costs, more and more woodworking manufacturers are turning to California Redwood, the wonder-wood of industry.

LAMINATED TABLE, electronically glued, shows Redwood's beauty of color and glue-holding power. Economy, too, for table-top is made entirely of shop grade Redwood!

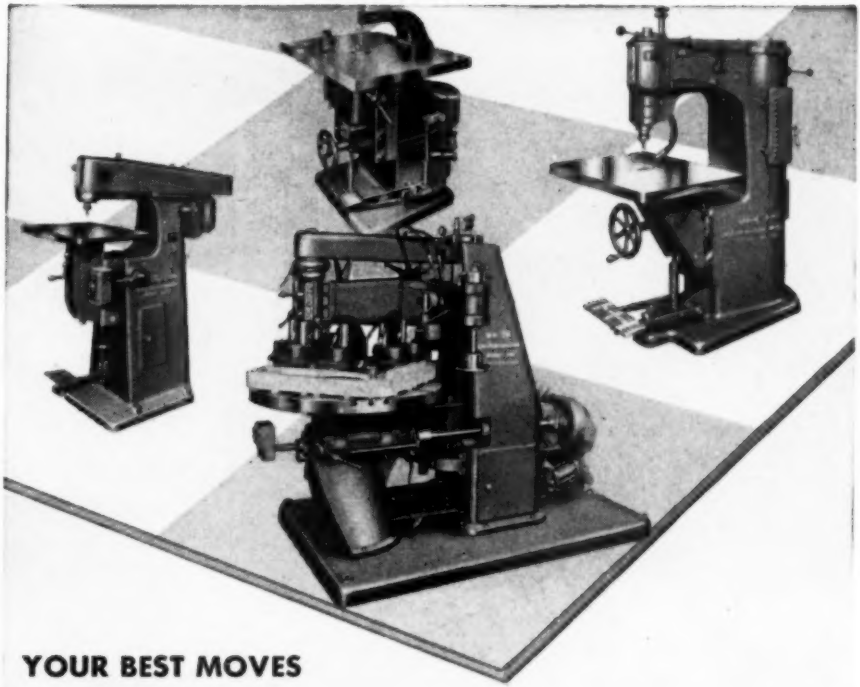
GARAGE DOOR employs to advantage Redwood's attractive appearance, light weight, insulating value, ability to hold finish and resistance to weathering.

Redwood's unique combination of grown-in properties—durability, workability, insulating value, paint retention, strength, light weight, glue-holding power—enable it to do more jobs better than any other wood.

Three such jobs are illustrated on this page. Perhaps Redwood can help you do *your* job better, too. For specific information, write the California Redwood Association, 576 Sacramento Street, San Francisco 11, California.

SUGAR CART PLANTER, sold as an authentic scale model kit, shows what the small novelty manufacturer can do with shop-grade Redwood.

The Association, a clearing house of Redwood data, is maintained by thirteen leading Redwood Mills: Northern Redwood Lumber Co., Pacific Lumber Co., Rockport Redwood Co., Simpson Logging Co., Union Lumber Co., Warm Springs Redwood Co., Willits Redwood Products Co., Wolf Creek Timber Co., Inc., Arcata Redwood Co., Coastal Plywood & Timber Co., Eureka Redwood Lumber Co., Hammond Lumber Co., Holmes Eureka Lumber Co.



YOUR BEST MOVES FOR LOWER COST

CAN ALWAYS BE MADE WITH

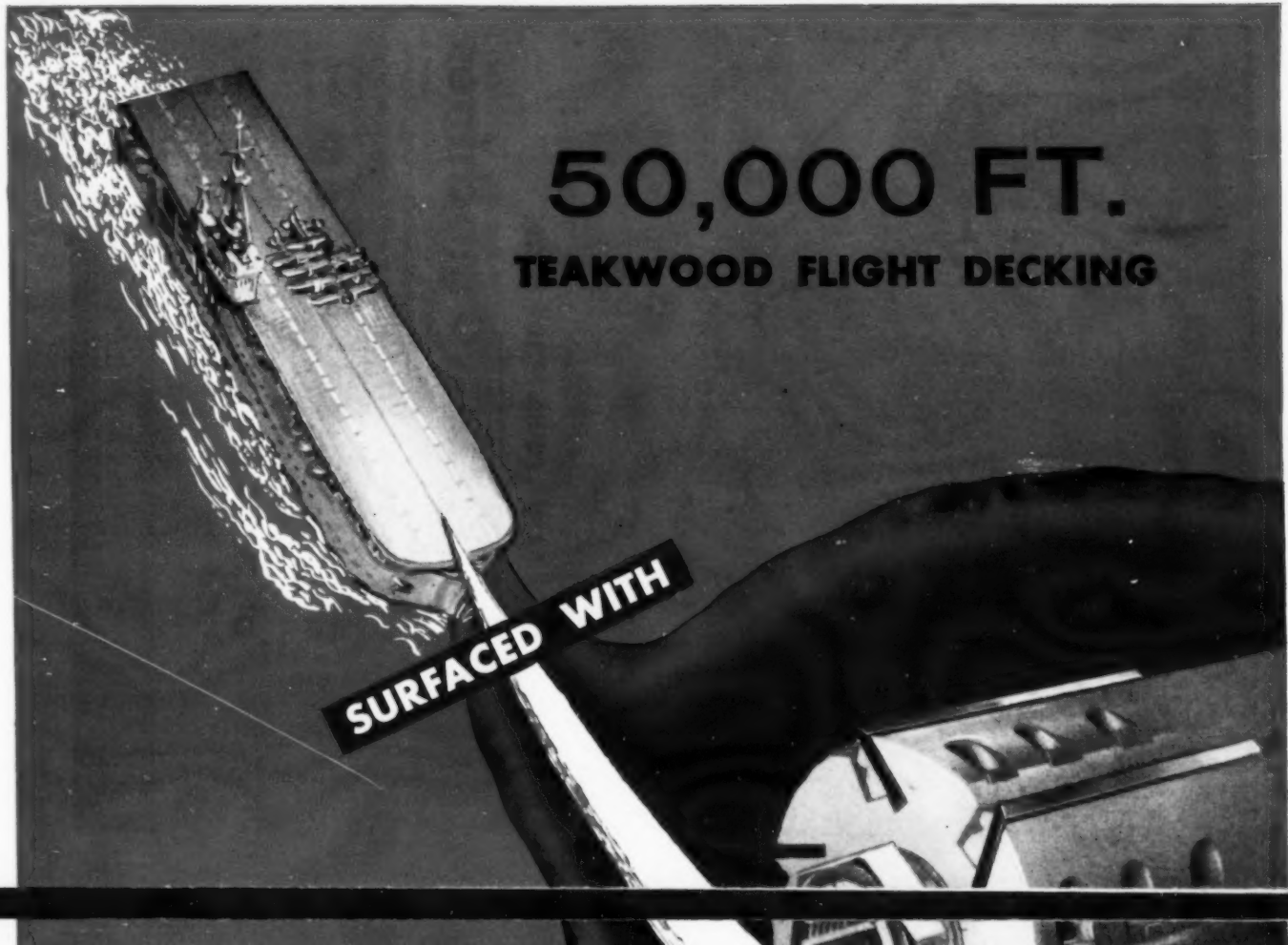
Onsrud® machines

Proved by over 30 years of service in woodworking, Onsrud high speed machines dependably give you fast cutting, ease of operation, smooth work, and accuracy . . . for low cost production. For routing, shaping and related operations, you'll always find Onsrud machines give you more for your machinery investment. Your inquiry is invited.

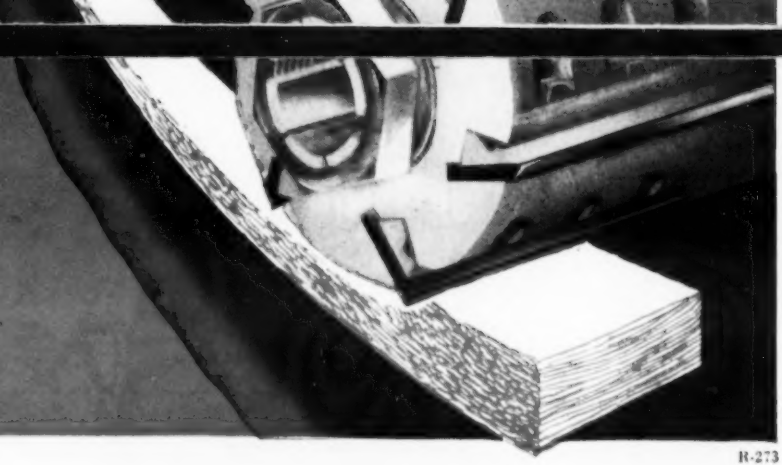
ONSRUD MACHINE WORKS, INC.

3947 Palmer Street • **Chicago 47, Illinois**

ONSRUD HIGH SPEED WOODWORKING MACHINES . . . SHAPERS . . . AUTOMATIC SHAPERS . . . ROUTERS . . . PORTABLE ROUTERS . . . AND ATTACHMENTS


50,000 FT.
TEAKWOOD FLIGHT DECKING
SURFACED WITH

ONE SET OF FIRTHITE MATCHER KNIVES



R-273

One set of Solid Firthite Matcher Knives surfaced over 50,000 feet of flight deck Teakwood on all four sides for a recent aircraft carrier. This operation was completed without REMOVAL for SHARPENING. Such unprecedented production is definite proof of the efficient and economical value of solid Firthite Straight Knives.

Firthite Knives also hold the record of surfacing more than ONE MILLION lineal feet of oak flooring without sharpening or jointing.

You, too, can get the same production economy as these woodworking manufacturers who have recognized the high extra dollar value of such highly productive tools. Contact your established woodworking tool maker for Standard Firthite Style SK and KB stock knife blanks

Use Solid Firthite Straight Knives on Molders, Matcher, Jointers, and Glue Jointers. Order them today . . .

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Firth Sterling INC.

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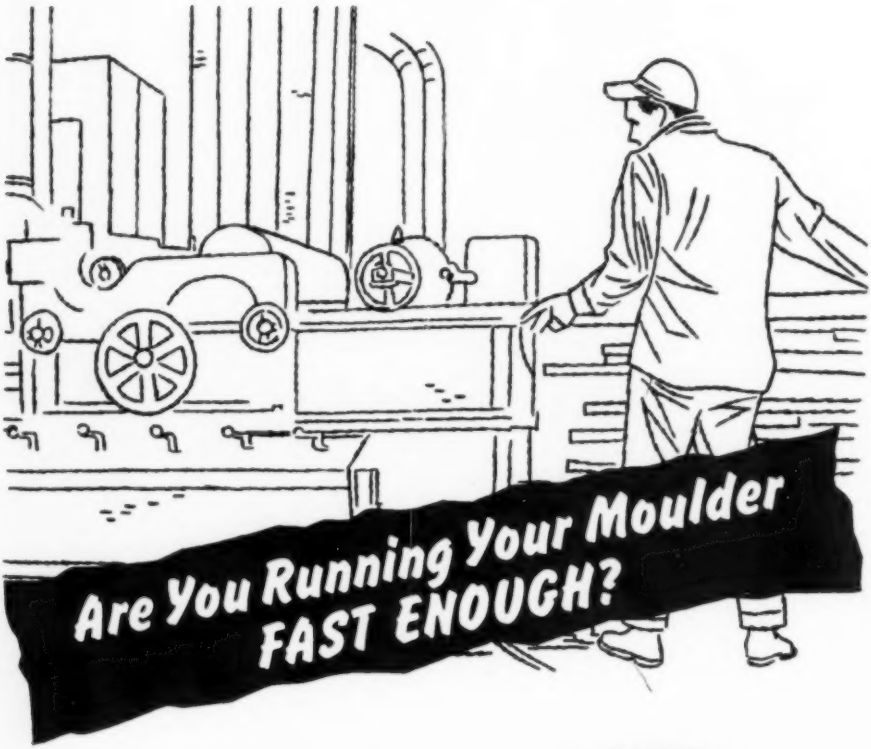
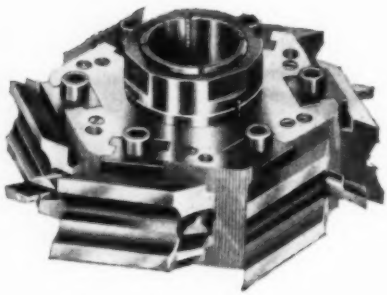


Are You Running Your Moulder FAST ENOUGH?

If not, it's just as if you were running your car on worn out tires—going slow for fear of a blowout and wreck. Why should your production be handicapped by use of old, outdated cutterheads. Ask Diehl for recommendations on all your cutting operations—to get the correct head, operating at the right spindle speed, to assure best results and maximum production.



CUTTER DIVISION

On the Banks of the Wabash

THE G. M. Diehl MACHINE WORKS, INC.

WABASH, INDIANA • U.S.A.

Whether for a **MASS** *market or a class market furniture line -*

Raybond HF* Edgegluing Equipment!

Used by volume furniture producers, and by creators of more expensive pieces, Raybond Edgegluing Press serves each type equally well and economically.

This press fits into both quantity and quality schedules, gluing solid-type furniture as well as core stock.

The facility of Raybond's one-man operation, uniformity of finished panel, and space saving are but some of the features of Raybond's proven place on the production line. *High Frequency current does in minutes what outmoded methods require hours to finish. *Write for details.*

Raybond also makes Edge-Banding Presses, Panel-on-Frame Presses, Box Presses, Wood Bonding Guns, Laminated Veneer Presses, Special Jigs and Assemblies.

ELECTRONIC HEATING CORP.

66 NEEDHAM STREET

NEWTON HIGHLANDS, MASS.

GOOD PERFORMANCE EARNS APPLAUSE!

KITTINGER COMPANY, INC., Buffalo, N. Y.

"Our Standard kilns have been in use for 7½ years and are still operating in good condition."

Jack Batson, *Production Manager*

HAMMOND INSTRUMENT COMPANY, Chicago, Ill.

"Standard kilns in operation for 3 years and we are getting very satisfactory service."

D. O. Washburn

FRENCH & HEALD COMPANY, Milford, N. H.

"The writer personally likes the operation of these individual motors on Standard kilns, in use for 6½ years."

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GREGG MANUFACTURING CO., St. Paul, Minn.

"For 6 years, our Standard kilns have been in operation and we are very satisfied with the service they have given."

John W. Gregg, *President*

Manufacturers of Internal Fan Kilns

STANDARD

Engineers and Manufacturers Since 1887

DRY KILN COMPANY

Write for Illustrated Standard Catalog

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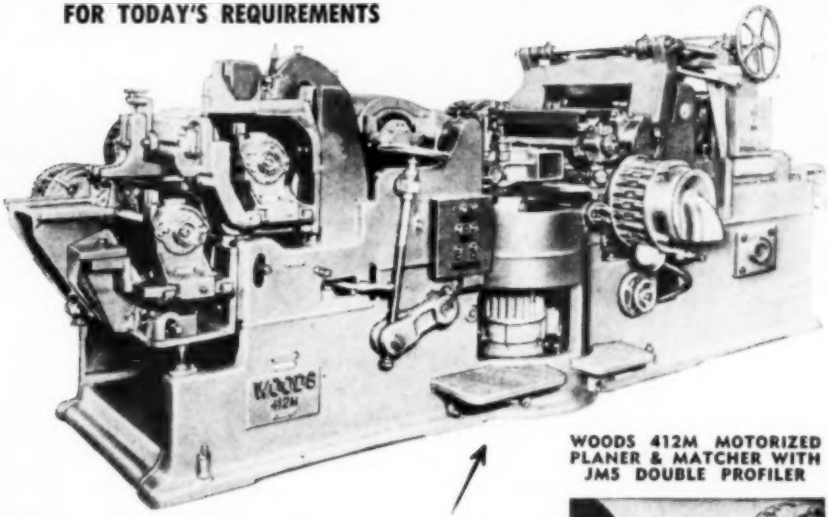
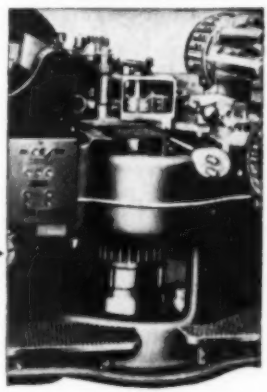
"THE PLANERS OF WOODS"

FOR TODAY'S REQUIREMENTS



WOODS 412M MOTORIZED PLANER & MATCHER WITH JM5 DOUBLE PROFILER



- Continuous frame construction with bulge at sidehead units for frame rigidity and positive sidehead clamping.
- Woods 412M Series designed to meet present-day requirements, more production and better finished quality, lower operating cost, less maintenance and less down time.
- Large range of power using Woods fully taped insulated built-in motors.
- Write for full particulars.

S. A. WOODS MACHINE CO.

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PORTLAND, ORE. • MEMPHIS, TENN. • LITTLE ROCK, ARK. • SAN MATEO, CALIF.
RICHMOND, VA. • NEW YORK, N. Y.
CANADIAN W. A. AKHURST MACHINERY COMPANY • VANCOUVER, B. C.

You don't have to go *this* far to find coated abrasives to fit your needs. Just look to Armour.

Many woodworking jobs require special abrasives – and many use just regular abrasives. Whatever job you're doing, Armour has a *complete* line of quality abrasives for you to choose from.

This Armour line includes paper, cloth or combination rolls in Electrocoated Garalun or Heat Treated Garnet. There are sheets of cabinet paper, belts, discs, and specialized forms.

If you are drum sanding, finish sanding, working on panels or *any* shape or size of stock, there's an Armour abrasive to help you do a better job for less money.

Your Armour representative will be glad to help you select the best abrasive for you. Just write or call him today.

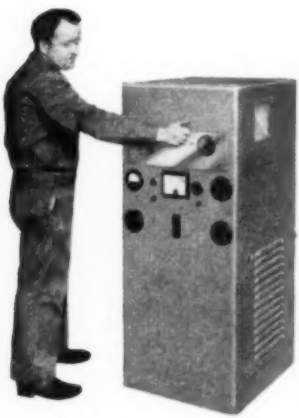
Whatever your woodworking job, Armour has the abrasive you need!

Armour Coated Abrasives can help you do a better job, too!

ARMOUR *Coated Abrasives*

Armour and Company • North Benton Road • Alliance, Ohio

This installation at Ply Curves, Inc. takes only one-fourth the floor space required by conventional equipment. The set-up makes short production runs economically practical.



With the Thermex 3-KW Bonding Equipment you can cut costs on many bonding operations. It's compact and portable. Time is saved by a dual-load switch . . . while one load is being bonded, the other can be prepared.

Simplifies dies for short runs

THERMEX* Bonding Equipment permits the use of inexpensive wood dies, overlaid with copper electrodes. This greatly simplifies tooling up for short runs. This equipment bonds and cures assemblies in a minute or two, permitting volume production in a small area, with a minimum of labor. Have a Thermex field engineer study your operations and make recommendations. Write The Girdler Corporation, Thermex Division, Louisville 1, Kentucky.

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Choose Thermex Bonding Equipment for:

EDGE-BONDING LUMBER • FABRICATING ASSEMBLIES • BONDING PLYWOOD
BONDING PANELS-TO-FRAMES • MOLDING LAMINATED PARTS

The GIRDLER Corporation

Thermex Division

Jiffy macerated paper pads and blankets are DOUBLY dependable

DOUBLE DRESSER
Courtesy of The MENGEL COMPANY,
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Jiffy macerated paper pads and blankets protect both furniture side and top surfaces and their finishes.

The furniture floats in the soft cushioning of JIFFY PADS which absorb transportation shocks and vibrations. JIFFY PADS fit snugly, conform easily to any shape—prevent scratches and other surface damage.

Also available—JIFFY PADS AND BLANKETS lined with velvety soft "FACIAL TISSUE" for delicate surface finishes which require the ultimate protection.

JIFFY PADS AND BLANKETS meet the requirements of item 19501, note 2, paragraphs 1, 6, 16 as specified by the Uniform Freight Classification.

JIFFY MANUFACTURING COMPANY

General Offices: **HILLSIDE, NEW JERSEY**

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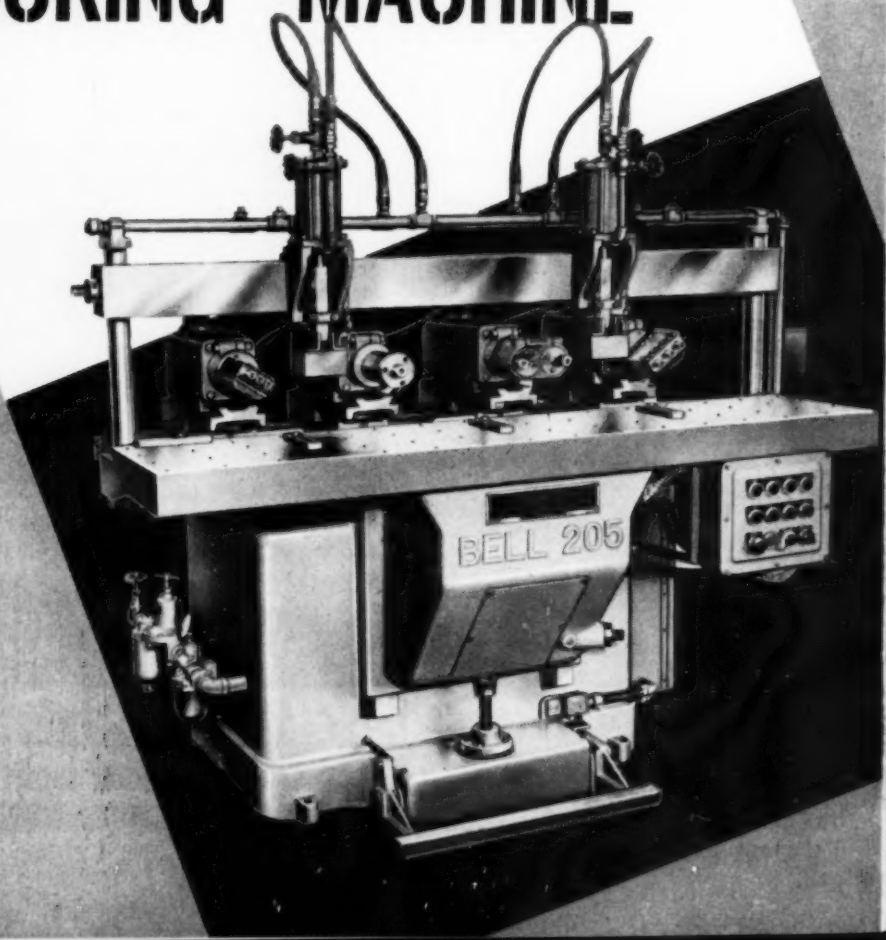
● SUPREME BAND SAWS cut faster... have increased cutting capacity with minimum breakage! Present day high speed equipment demands SUPREME SAWS. Free from kinks and imperfections. Made from the finest Special Nickel Alloy Steels, tempered for toughness... to stay sharp! There is a Supreme Band Saw for every industry... for every material. Special purpose saws are made to order.

BEST FOR EVERY INDUSTRY

The SAW & KNIFE SPECIALTY CO., Inc.

6526 CARNEGIE AVENUE • CLEVELAND 3, OHIO

Bell Announces a new Electric-Pneumatic BORING MACHINE



The

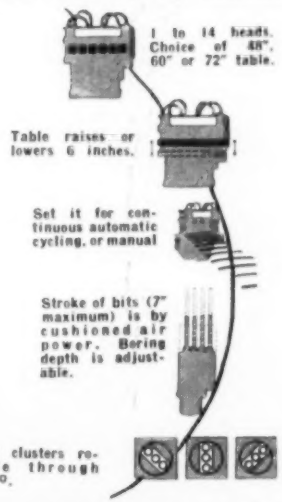
It has

"205" is a cost-cutter!

features never before offered in a low-priced boring machine

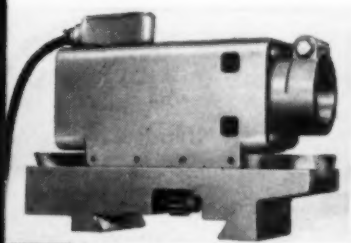
Versatile "205" will handle your 1001 boring jobs

This is it! . . . The Boring Machine that answers the problems in **small, medium** and **large** plants! As a single-purpose machine in large plants you can't beat its cost-cutting efficiency. And yet it's just as ideally suited to general-purpose boring! The "205" can replace an entire group of smaller, less flexible machines. . . . It will do everything they do, and better!


1 to 14 heads. Choice of 48", 60" or 72" table.
Table raises or lowers 6 inches.
Set it for continuous automatic cycling, or manual
Stroke of bits (7" maximum) is by cushioned air power. Boring depth is adjustable.
Bit clusters rotate through 360°.

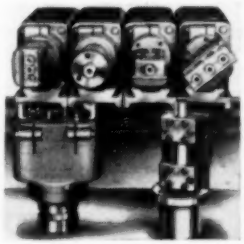
The "205" can "grow" from a low-cost beginning!

Progressive owners can start with a single or two-head machine at low cost. Additional heads, spindle clusters and accessories can be added as production requires them. Operating efficiency is built into the machine, and does not vary with one head or fourteen! You'll like the simplicity of the "205." It's a machine ANYONE can operate well without special training. (It has every known safety feature, too.) Simple and rugged construction is your assurance of low maintenance needs.



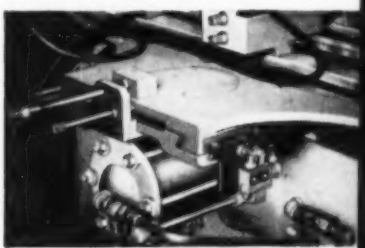
Compact Boring Head Unit

In each head a 1½ H.P. motor delivers power directly to boring bits, with no power lost through unnecessary linkage. (2 H.P. available for extra-tough jobs.)



Many Spindle Clusters

Pictured here are six of the many standard and special spindle clusters available. Each cluster fits any motor unit on the "205". Units have one to six boring spindles.



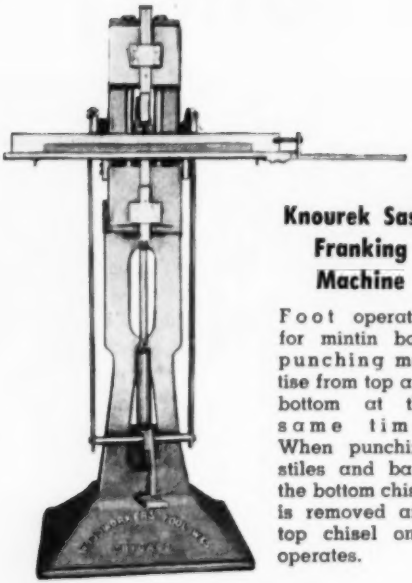
One Cylinder Powers All Heads

All heads move as one by smooth air power. Boring depth is individually controlled, using any desired part of the 7" maximum stroke. Air valve determines speed of boring stroke.

BELL WOODWORKING MACHINERY

THE BELL MACHINE COMPANY
71 Jackson Drive
Oshkosh, Wisconsin

"Tool Up With Woodworkers"



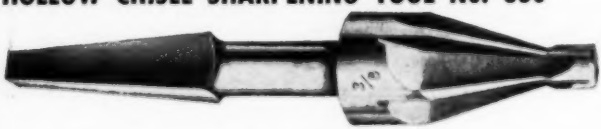
Knourek Sash Franking Machine

Foot operated for mintin bars punching mortise from top and bottom at the same time. When punching stiles and bars, the bottom chisel is removed and top chisel only operates.

Champion Plow and Bore Machine

For old reliable check rail double hung sash, using sash cord and pulleys.

HOLLOW CHISEL SHARPENING TOOL No. 830



New Creation by Woodworker's

A simple tool used in hand brace to sharpen hollow chisels.

Kitchen Cabinet Door Cutters

Used on shaper for cupboard doors, cutting quarter round and rabbett. Made of high speed steel, Vigorite Processed and Carbide Tipped.

WOODWORKERS TOOL

"Tool Up With Woodworkers"

Knourek Bench Type Electric Sash Trimmer

Fast, clean, accurate production, with solid steel cutters revolving at 3600 R.P.M. — For divided light and fancy sash 1⅛", 1⅜" & 1¾" sizes. — One-half H. P. single or 3 phase motor. — Foot treadle available for divided lights on heavy doors.

"Tool Up With Woodworkers"

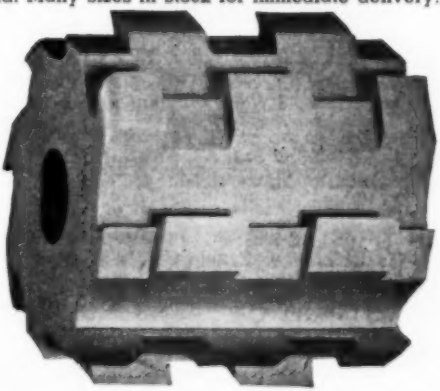
DOES YOUR MORTISE EQUIPMENT MAKE A CLEAN, STRAIGHT CUT LIKE THIS?

BEARING TROUBLE?

Try the special lubricated Renold bars. Cut your bearing trouble to a minimum. Use Renold guide bars and mortise chains. A wide range of sizes to choose from. One of the world's finest lines of mortise cutting equipment, used all over the world. Many sizes in stock for immediate delivery.

Knourek Hog Type Heads

For use on shaper, to cut smoothly with and cross grain without tearing out. Will shape birdseye maple, curly and cross grain stock, tapering chair legs. Furnished in one size only, 2¾" diameter, 2¼" thick, holes ¾" to 1¼" diameter.



WORKS... **220 SO. JEFFERSON ST. CHICAGO 6, ILL.**

Behind every successful application of **DIELECTRIC HEATING** you'll find **WESTINGHOUSE**

NIGHT SHIFT ELIMINATED, LABOR COST REDUCED 57%, $10,000 SAVED ANNUALLY

Edge-gluing—one of first and foremost uses for Westinghouse Dielectric Heating—is shown here as used by Williams-Brownell. A Westinghouse 10KW generator is the backbone of this setup. Combined with a Hart-Union Electrogluer, the installation is certified for FCC regulations. The speed and quality of panel production resulting from this combination can bring extraordinary economies to you, too. For further information, write Westinghouse Electric Corporation, Dielectric Heating Section, 2519 Wilkens Avenue, Baltimore 3, Maryland.

J-02258

YOU CAN BE SURE...IF IT'S

Westinghouse

New POSITIVE-LOCKING WEBBING FASTENERS *speed assembly*

Webbing is inserted through slots and looped back over itself . . . this adaptation of the simple but effective "luggage strap" principle ensures positive grip without danger of slippage.

One end is attached by positioning clip so that drawn stud locks in hole bored in tubing. Process is repeated at other end of webbing, using simple hand tool for leverage.

Result . . .

Webbing seats and backs are tight and smooth.

Webbing is firmly anchored both ends, not weakened by screws.

Seats and backs are as easy to take apart as they are to put together.

No special skill required.

UNITED-CARR FASTENER CORP.

31 Ames Street, Cambridge 42, Mass.

MAKERS OF DOT *FASTENERS*

SPEED

Your Production! Raise the quality of Your Planing!

No. 380-A
PLANER

THE PRECISION PLANER

There is NO SUBSTITUTE for Quality! Price alone is never a true gauge of value. Power Planers offer PREMIUM VALUES at standard prices. Eighty-six years of quality manufacturing back our claim to PRECISION WORKMANSHIP. Thousands of satisfied users are our best advertising. The Model 380 Planer is modern—rugged—compact—safe—but, most of all, it's TOPS IN PLANING.

HIGHEST QUALITY SINCE 1867

Planers - Tenoners - Planers & Matchers
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L. POWER & CO.
2823 Oakford St.
Philadelphia, Pa.
Manufacturers of POWER Machinery Since 1867

for a fabulous finish...

JEWEL BRAND

Abrasive Belts

Finer finishing — sanding, smoothing, polishing — for all types of wood products.

ABRASIVE PRODUCTS, INC.
551 Pearl Street **South Braintree 85, Massachusetts**

No Other Power Saw Has ALL

—AND THAT MEANS BETTER PRODUCTION

No saw on the market at a price anywhere near comparable has as many outstanding built-in advantages of construction and performance as the Delta Tilting Arbor Circular Saw.

- **it does *every* basic cutting operation, quickly and with unsurpassed accuracy.**
- **easy to move—locate it in your shop for easiest access, greatest efficiency as to time and motion.**
- **sturdily built for continuous mass production work.**
- **with Delta's broad selection of accessories, your saw is a tool of countless uses—cuts dados, tenons, mouldings; does numerous other operations.**

Check these quality features of all 3 Delta Circular Saws

1. **TILTING ARBOR**—best design for accuracy: work always level; table height does not change

2. **TRUE-RUNNING ARBOR**—arbor precision ground; facing of flange after assembly prevents wobble

3. **PERFECTED V-BELT DRIVE**—allows maximum thickness of cut capacity; motor tilts with arbor

4. **DOUBLE SEALED, LUBRICTATED-FOR-LIFE BALL BEARINGS**—No lubrication problems

5. **PRE-LOADED BEARINGS**—longer bearing life, no play in arbor

6. **PERFECT ALIGNMENT**—milled miter gage grooves are parallel

7. **DOUBLE-LOCK FENCE**—fence extends full length of table, locks at both ends, has micrometer adjustment

8. **PERFECT TABLE SURFACE**—*ground* for precision and smoothness; cast iron table scientifically ribbed to maintain original accuracy

9. **SAFE, EASY CONTROLS**—all controls and adjustments readily accessible, easy to operate

10. **TREMENDOUS RIPPING CAPACITY**—rip fence guide rails extend beyond table, provision made for adding auxiliary table

11. **MASSIVE MITER GAGE**—has adjustable stops for mitering and straight cut-off, long guide bar for added accuracy

12. **NARROW BLADE SLOT IN TABLE INSERT**—full support of work; blade remains centered at any height or tilt angle

THESE SPECIFICATIONS HELP YOU CHOOSE THE SAW YOU NEED

	8"	10"	12"
Diameter-Arbor	⅝"	⅝"	1⅛"
Diameter-Blade	8"	10"	12"
Maximum Depth of Cut	2¼"	3⅛"	4⅛"
Maximum Depth of Cut at 45°	1 9/16"	2⅛"	2⅞"
Maximum Rip—Right of Blade	24"	25"	30"
Table Size	15"x22"	20"x27"	38"x48"
(With Extensions)	22"x25"	27"x36"	38"x48"
Distance—Front of Table (Blade extending 1" above table)	12⅝"	13½"	19"
Table Height	34½"	34"	34"
Speed	3850 rpm	3200 rpm	3750 rpm

These 12 DELTA Features

AT LOWER COST FOR YOU

3 GREAT TILTING ARBOR MODELS: 8"-10"-12"

DELTA Quality Makes the Difference

Get the money-saving facts about these remarkable saw values. Ask your Delta dealer —he's listed in the Classified Telephone Book under "Tools" or "Machinery" and send for catalog data on Delta circular saws. Use the coupon.

DELTA QUALITY POWER TOOLS
Another Product of **Rockwell**

Delta Power Tool Division
Rockwell Manufacturing Company
661D N. Lexington Avenue
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Please send me data on Delta Circular Saws

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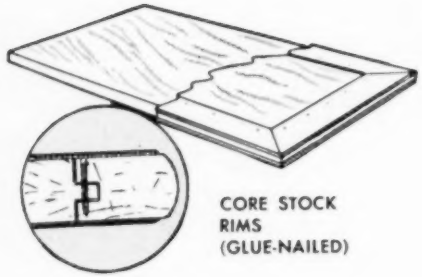
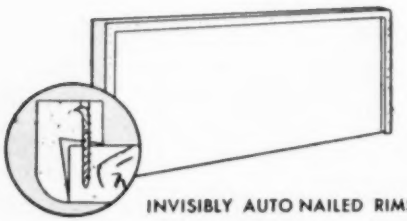
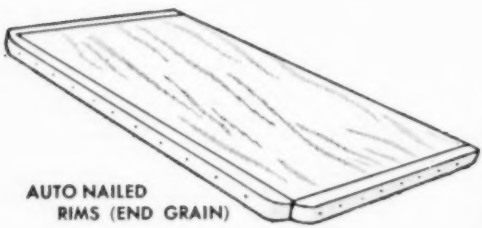
ON A LIMB WITH YOUR RIMS?



CORE STOCK
RIMS
(GLUE-NAILED)



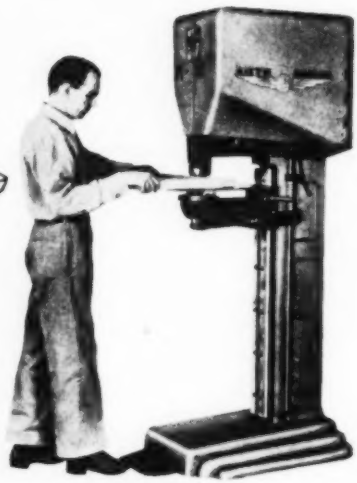
INVISIBLY AUTO NAILED RIMS



AUTO NAILED
RIMS (END GRAIN)

Rimming, so slow by hand, goes in at 3 nails a second via Auto-Nailer. It eliminates clamps and glue work, with a 1,000 pound squeeze. It makes its own nails — drives and countersinks them in one motion. Why don't you send us samples of what you do (one complete and two knocked down), and let us show you man-saving- hour-saving- dollar-saving results of Auto-Nailer.

AUTO NAILER
TRADE MARK REGISTERED



Write for *Free* catalog that tells the story of Auto-Nailer's amazing versatility.

AUTO-NAILER CO. **263 MARIETTA ST., N.W., ATLANTA 3, GEORGIA**

COST CONTROLS —CONTROL PROFIT—

Very often we come upon examples that prove the truth of this editorial's title. I would like to relate a story which is a good example. Due to the years elapsed since its inception, there is a genuine opportunity to evaluate its worth. Even though I do not mention names, there may be some of our readers who will know the firm and the men involved.

Several years ago two young men were discharged with honor from the army. Their father had manufactured dimension stock used by the furniture industry for many years. These boys had worked in their dad's factory and during their army service they took every opportunity to study similar plants in this country and in Europe. They came home with many ideas about operating a dimension plant.

When the boys returned to the plant, they found their father very discouraged by what he termed "price cutting competition." After studying the factory, which was equipped with a good many pieces of old machinery and operating by time-consuming methods, they were both shocked and surprised. While they were startled by what they found, it was surprising what a difficult time they had convincing him that it was the production part of his "cost control" that was decreasing his profits.

The sons investigated the cost of replacing the old equipment. They studied the shop layout and discussed rearranging the flow of work. Their research indicated that production could be doubled at a lower labor cost.

It was difficult to convince their father. In fact, the sons bought the business from him although he remained the titular head of the company. The sons took over and equipped the plant with up-to-the minute machinery. Experts helped them lay out a new production line. Then they had their production "cost controlled" and were delighted to find that they could profitably meet competition. It was possible to set aside a certain amount for amortization of machinery and equipment costs.

This all took place more than ten years ago. Today these men have one of the best operations in the country. They believe that cost controls do control profit. For them it has been good business to watch their cost controls and keep them down by using modern machinery and equipment.

Ned Bailey
Editor in Chief

Lemmon & Snoap . . . Pioneers in carbide-tipped woodworking saws, present the finest precision cutting tools of the industry. A complete line of cut-off . . . mitre . . . rip . . . gang-rip . . . thin-kerf and non-kicking safety saws in all diameters. *It costs no more for the finest.*

ALL LS SAWS ARE OFFERED ON A 15-DAY FREE TRIAL BASIS

for additional information, write

LEMMON & SNOAP *SAW MANUFACTURERS*

288 BRIDGE ST., N.W., GRAND RAPIDS 4, MICHIGAN

The Hardwoods Exhibit opened at the Chicago Museum of Science and Industry on March 20. A trip through this part of the museum is most worthwhile to everyone in the woodworking industry. Charles R. Sligh, Jr., was the speaker at a banquet the preceding evening. In his talk, "A New Day Dawns For Hardwoods," Sligh stressed cooperation with the government and the importance of letting the government know how the business man feels about current matters.

A decade of progress in prefabrication was marked by the tenth annual meeting of Prefabricated Home Manufacturers' Institute which was held in Chicago during the middle of March. This industry has produced more than 300,000 new homes in the postwar period.

We want to call special attention to the article we are featuring this month. It is on page 55 and describes the Southern Pine Convention being held in New Orleans, April 8-10.

The Woods Products Section of the National Safety Council has announced awards for our industry. In the plywood and veneer business the Mengel Company, General Plywood Corp. and Algoma Plywood & Veneer placed in first, second and third, respectively. In the furniture industry, safety awards went to Kroehler Manufacturing Co., Hickory Manufacturing Co. and the Mengel Co. These awards are for the year 1952.

The residential boom will continue for awhile, states the F. W. Dodge Corp. The company reports that there was 20% more building in the first two months of 1953 than there was in January and February of 1952.

The Hardwoods Exhibit Committee presented awards to five individuals or companies at the banquet opening the exhibit. Two awards were pre-

sented to furniture designers. The exhibit and the interest that the exhibit has aroused are sure to do the entire hardwood industry a real service.

The Housing and Home Finance Agency has authorized the Public Housing Administration to purchase, for test purposes, a new type expansible trailer coach which will provide 100% more living space than an ordinary large size trailer coach for about 15% additional cost. If this newly developed trailer measures up to specifications and is demonstrated to be a practical and economical alternative to the six-sleeper trailer, it is expected that consideration will be given to a limited test project of this trailer.

Cherry veneer popularity is increasing, we are told. January demand for American walnut veneer climbed higher than in any month in 1952.

Furniture decontrol has not had very far reaching results as yet. Conditions and prices remain strictly status quo, according to a spot check of manufacturers and retailers. The government cautions businessmen that records on base period prices, and on sales made during price control, must be kept until two years after the Defense Production Act has expired. This means keeping records until June 30, 1955.

A forward step was taken by civic and business leaders of Pearl River County, Miss. They have posted a $500 reward for arrest of the person who set a devastating forest fire in their county earlier this month. A mass meeting was held following the three-day blaze that burned out more than 20,000 acres of forest land. Perhaps action like this taken on a national scale would mean preventing many forest fires.

Optional depreciation is getting careful consideration. Under present law, businessmen are required to write off the cost of plant and equipment over fixed periods, ranging from three years for a salesman's car to 66⅔ years for a well built warehouse. Many tax men contend companies should be permitted to write off plant and equipment over any reasonable period they choose. In the long run, they argue, this would make no difference in Federal revenues. If equipment were written off over shorter periods than at present, taxable income would be reduced in earlier years, increased in the later period.

We are still receiving inquiries from our readers about the booklet on American Woods. This should be ready about the first of May and will be available at 25c per copy.

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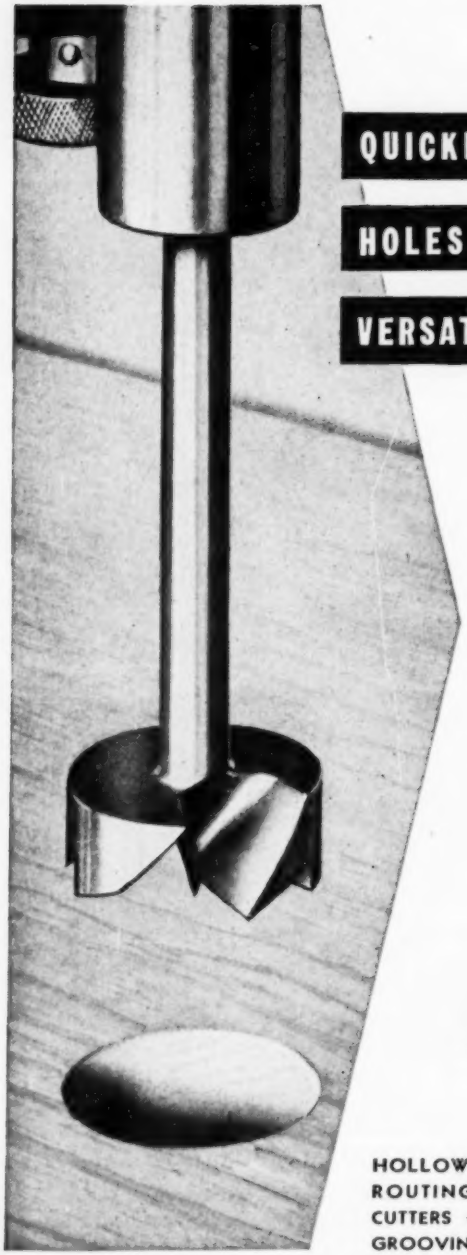

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For Schrader's ClampAir gives you speed and convenience for clamping such as you've never seen before. The ClampAir—actually a bantam but husky push-type air cylinder—gives you—*instantly*—any gripping force you want. Holding pressure is *steady*—never relaxes, yet can be applied or released in nothing flat.

Check with Schrader for full details on how ClampAir can make any holding operation a pleasure. Write, outlining the processes you use where ClampAir's fast, effective holding power will help—or fill out the coupon below.

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Comments from THE NATION'S CAPITAL

By Arnold Kruckman
Washington Correspondent

During the eight weeks ending with the middle of March, the lumber and woodworking industry of the country received government contracts totaling $15,486,000. Out of this aggregate those who sell lumber received orders for $9,249,000 worth of products. The orders to the manufacturers and sellers of woodworking products totaled $6,237,000. The contracts went to 306 different firms, roughly averaging $54,000 each. Actually, the individual orders ranged from $11,000 to $400,000. Almost every state got some business. With two or three minor exceptions, all the lumber was purchased by the army. The wood products procured consisted of furniture, walnut tables, drawing boards, folding cots, school desks, plywood, flagstaffs, library equipment, mop handles, auditor chairs, cafeteria chairs, pallets, showcases, containers, packing boxes, mess tables, cross arms, boxes, caskets, footwalks, gunstock blanks, carrier cases, brush blocks, wood costumers, drying trays, crating, work benches, dinette tables, axe boxes, wooden tanks, postal cabinets and school furniture.

The very useful Public Contracts Bulletin, which has been the handy source for this information, will be discontinued at the end of March. It is to be combined with the "Synopsis of U. S. Government Proposed Procurements and Contract Awards," which may be obtained for $7 a year or $4 for six months. Those who want it should write Administrative Service Office, U.S. Department of Commerce, Room 1300, Northwest Pylon, New Post Office Building, 433 West Van Buren Street, Chicago 7, Illinois. The Public Contracts Bulletin is a sacrifice to economy.

Last December this letter reported conferences had been held between officials of NPA, SDPA, RFC, the Defense Department, and others, to arrange a plan to induce woodworking industrialists to rehabilitate their plants by means of government loans. No further announcement has been made but

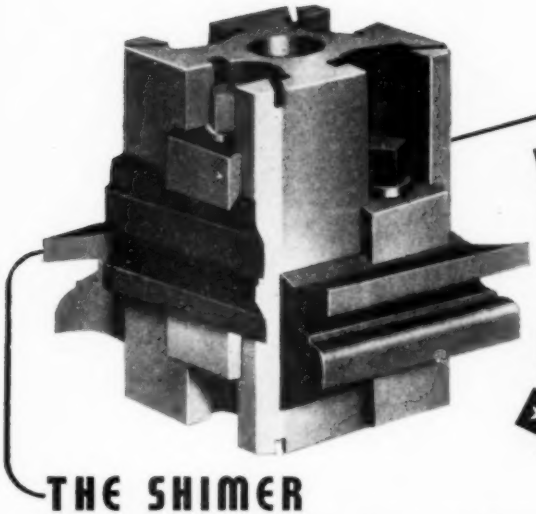
the recent reports of SDPA and RFC indicate the undertaking has been successful.

RFC recently announced business loans to Builders Products, Inc., Three Forks, Montana; Fogarty Brothers Lumber Co., Missoula, Montana; Polston Flooring Mfg. Corp., Lafayette, Tenn.; Hood Lumber Co., Hermanville, Miss.; South Coast Lumber Co., Brookings, Ore.; Kelley Lumber Co., Buford, Ga.; Eastern Wood Works, Inc., Baltimore, Md.; Rowan Peck Lumber Co., Butte, Mont.; Long Island Paint and Chemical Co., Glen Cove, N.Y.; Idaho Lumber, Inc., Idaho Falls; Idaho Cabinet Co., Idaho Falls; Idaho Forest Products, Idaho Falls; Rountree-Hunter Lumber Co., Fitzgerald, Ga.; Johnston-Crowder Mfg. Co., Inc., Birmingham, Ala.; Snellstrom Lumber Co., Eugene, Ore.; The American Wood Working Co., West Haven, Conn.; Southall Lumber Co., Inc., Franklin, Tenn.; Marshville Box Co., Marshville, N. C.; Sun Basin Lumber Co., Inc., Ephrata, Wash.; Snowcraft, Inc., Norway, Maine. In the aggregate, the loans total $1,951,000. They average $97,550 per loan; but they range from $8,000 to $700,000 per firm. Those who may wish to discuss plans for a loan should get in touch with Mr. A. D. McKellar, Program Executive for Lumber Production, Forest Products Division, National Production Authority, in Room 221H in the new General Accounting Office, Washington 25, D. C. His telephone number is Sterling 3-5200, Ext. 3696.

Senator Frank Carlson (R., Kan.) is regarded in the Senate as the President's most intimate friend there, and, therefore, is the most direct channel for an expression of the President's thought on legislation and other matters that come before Congress. Senator Carlson recently emphasized that the Truman Budget must be reduced from $78,600,000,000 to no more than $66,100,000,000. It is generally assumed that this will be the reduction, unless some extraordinary pressure makes necessary more defense expenses for Asia, Europe or the Middle East.

If you really want the budget reduced, let those who represent you in Congress know. A member of Congress said privately that business people seem to be the most reluctant among the voters to communicate their wants and their ideas to their senators and representatives. He urged that the time to do it is now; and he suggested that while every voter's opinions and suggestions arrest attention, there is particular value to the communication of an employer, who invariably has a substantial influence in the community.

He said: "If that business man back home really wants his idea to register, do it now; and when he sends a letter to his representative or senator, tell him to send a carbon to Maxwell W. Raab at the White House. Raab is the assistant to the president's assistant. Suggest, also, that a copy of the letter should go to the Undersecretary of the Treasury Marion B. Folsom, who is in charge of the operations of the Bureau of Internal Revenue. Both Raab and Folsom will be glad to learn what the voter wants because it will help them to make their recommendations to their chiefs. Many of these messages will get to the President."



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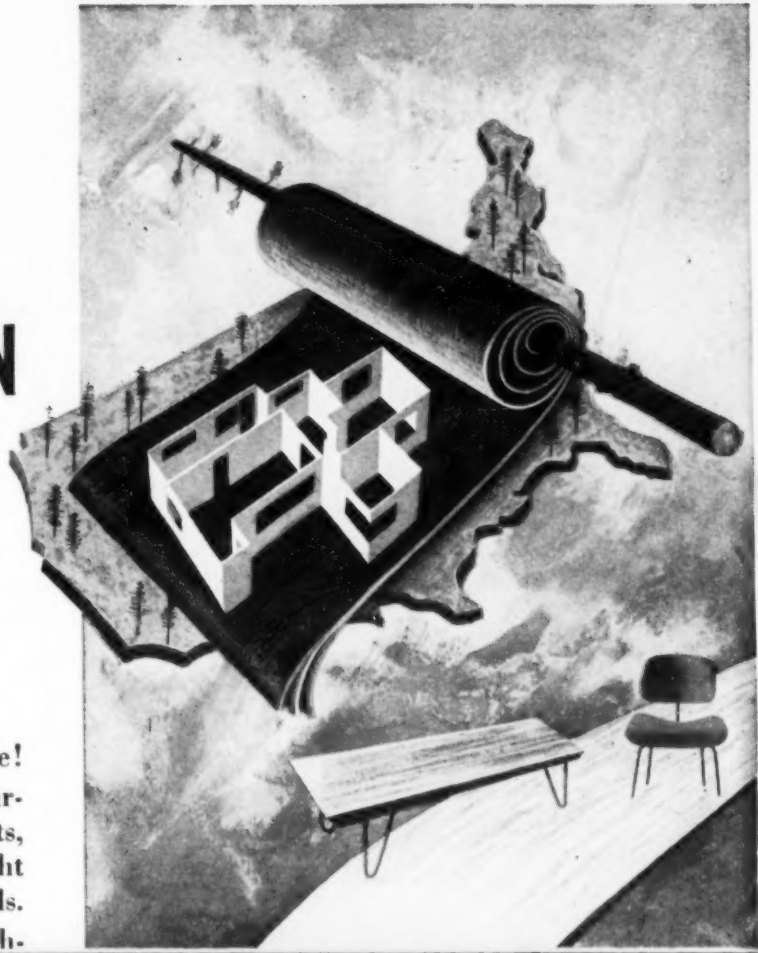

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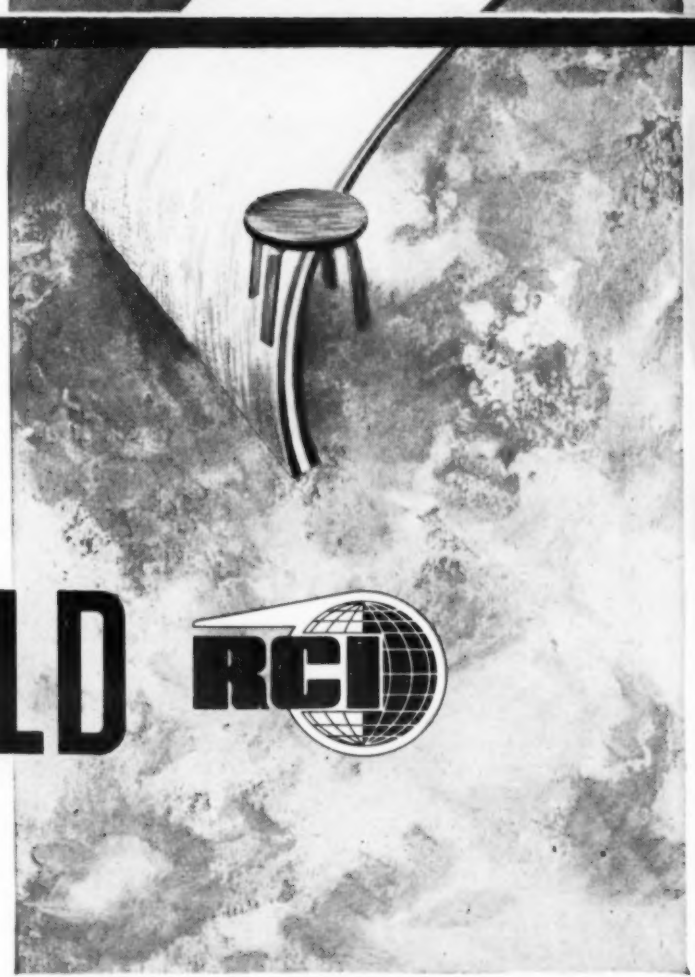


"Short Course for Contractors and Builders" is an interim progress report and condensation of the results of a research project, "Identification of Materials and Labor Savings in Wood Framing for Dwellings." The project consists of two parts: one, the comparative analysis of wall framing practices, and the other, the development of clear-span roof framing for a one and one-half story house. The purpose of the wood framing analysis was to compare wood framing practices in common use and those which recent research has proved feasible; and to identify those framing systems which would promote the greatest conservation in the use of lumber and manhours.

The development of clear-span roof framing was undertaken in order to retain the benefits of open construction for one-story houses while permitting occupancy of the upper floor. These data are of value to architects and builders in selecting combinations of framing best suited for specific situations. Write to Joseph H. Orendorff, Director, Division of Housing Research, Housing and Home Finance Agency, Washington 25, D. C., for a copy of the report and a blueprint of the one and one-half clear-span roof framing process.

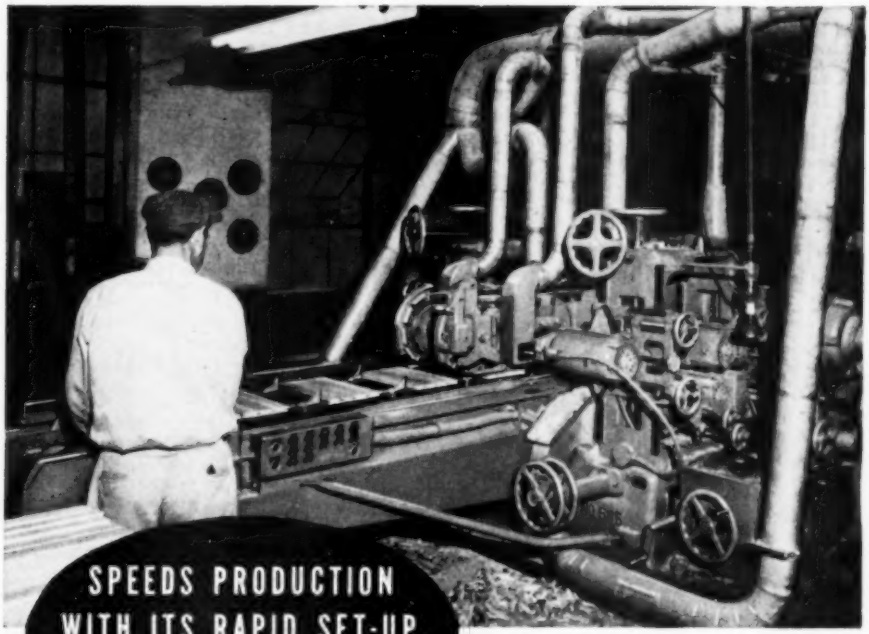
Incidentally, all sources here say the housing boom shows no sign of slackening. February starts were at the annual rate of 1,227,000 units. Administrator Albert M. Cole expects a real fight on the whole public housing program. Government agencies say repair and modernization is growing heavier. Congress has authorized another $500 million federal insurance on repair and modernization loans.

Lumber, wood products and everything related were decontrolled February 18. OPS underlines that sellers of lumber and wood products must keep all records of transactions, during the control period, prior to February 18. No records are needed for transactions initiated on or after that date. Paints, varnishes and lacquers were decontrolled on February 12; prefabricated houses, on the same date.

Their reduced budget impelled the National Production Authority to consolidate lumber and wood products, pulp, paper and paper board and printing and publishing in a single division known as the Forest Products Division. Each section has an assistant director in immediate charge. A. G. Natwick, Washoughal, Washington, is the director of the new division.

No one except those who produce for defense or military needs are required to secure CMP tickets. Generally speaking, NPA controls are off, although the Defense Production Act does not expire until June 30. NPA had 6000 employees here at its peak. Today it has 2000 and on May 1 it will have 1000.

On June 30, NPA will be entirely disbanded. Those who came from regular jobs in the Department of Commerce may go back there. It is expected relatively few will get their old jobs. Meanwhile, if you need information specialists, business analysts, economists, investigators and administrative specialists, the directors of personnel of both OPS and NPA are eager to supply you with information about men and women they think should be employed.



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... Greenlee No. 545 Double-End Tenoner

Here's what California Furniture Shops, Los Angeles, has to say about their GREENLEE No. 545 Double-End Tenoner, which they purchased in 1948.

"We are particularly pleased with its rapid set-up, accuracy, and flexibility. Since the installation of the No. 545, we have not had a moment's production loss from breakdown or mechanical failure of any kind.

"Production has been higher and the quality of work better. In fact, when the need came for a double-end cut-off saw, we purchased the GREENLEE No. 542 because of the similarity between it and the No. 545 Double-End Tenoner.

"To anyone considering the purchase of a Double-End Tenoner, we cannot recommend the machine too highly."

This is just another example of the satisfaction and important production benefits you, too, can expect from this outstanding machine.

For, as "a woodworking plant in itself," it performs *15 separate operations* swiftly, accurately . . . even processes serpentine and other irregular shapes. And it steals job after job from single-purpose machines to streamline production, lower your costs.

Get complete specifications today . . . ask for Bulletin 545. Greenlee Bros. & Co., 1864 Twentieth Ave., Rockford, Illinois.

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GREENLEE WOODWORKING MACHINERY: MORTISERS • BORERS • SAWS • TENONERS • PLANERS • SHAPERS • MORTISING and BORING TOOLS

Census says the remarkable growth of the Do-It-Yourself Market is reflected in the sales of paint, glass and wood products. Over 25% of the new homes are reported to be built at least in part by the owners. It also tells us approved motels now outnumber approved hotels; 43,356 motels represent a capital investment of $5.7 billion, an average of $132,000 each. They shelter 2,200,000 people. They use an amazing volume of services and products of the woodworking industry. It is reported, 11.5% of the present owners plan to build new motels this year; 38.2% plan to add an average of 7.5% of new rental units. The same study shows, in the Washington, D. C., area, there are only 28% furniture stores downtown and 52% in the suburbs.

Department stores are also decentralizing; morning shopping is found to be rapidly dying; in many locations Monday shopping is practically gone. It is predicted by 1957 most retailers will open at noon and close by 9:00 p.m.

Census also reports lumber and wood products rank second in importance in the mountain states. Lumber and wood products, including furniture, rank fourth and fifth in the east north central states of Ohio, Indiana, Illinois, Michigan and Wisconsin. Lumber and wood products, including furniture, rank fourth and fifth in the west south central states of Arkansas, Louisiana, Oklahoma and Texas. They take the same rank in the New England states. They stand fifth and sixth in the middle Atlantic states of New York, Pennsylvania and New Jersey; and fourth and fifth in the Pacific states; and the same rank in the west north central states of Kansas, Minnesota, Nebraska, North and South Dakota, Missouri and Iowa.

In early March, officials of the lumber industry presented three all-wood army truck body prototypes to the Ordnance Department in the Pentagon. Big brass, civilian officials and members of Congress heard Carl A. Rishell, director of research for the N.L.M.A., give a brief history of the development during World War II. The truck bodies were mounted on a two and one-half ton army truck chassis.

Canada reports its lumber output east of the Rockies is down by something over 100 million board feet. Argentina and Great Britain were the principal markets for Chilean lumber in 1952. The supply of teak, which we received principally from Burma before World War II, now comes chiefly from Thailand. Burma, however, is working energetically to recover the market. It has the supply, but must rebuild its processing and distribution services. It takes five years to make teak ready for export.

Gimbel's Department Store in Philadelphia sells completely furnished apartments on a non-profit, cooperative basis. They range in cost from $37 to $117 per month, including all utilities. Full-sized models of four different types are shown in Gimbel's store. The project is financed by a bank with Federal Housing Authority cooperation. Shoe Service Institute of America has circularized its tens of thousands of members to buy timber and make improvements in their shops.

How to make

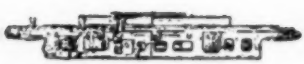
BIGGER PROFITS on BOXES

With the Linderman automatic pre-fabricator you can quote lower prices on boxes and yet make bigger profits. It is the ideal machine for producing box stock:

Automatic—fast—high output—minimum labor—eliminates operations—cuts lumber costs.

The Linderman takes *rough edged* stock, edges and joints it automatically with minimum waste. The double tapered dovetail glue joints formed on the Linderman are accepted as "one-piece stock" under U. S. Army Specification #50-62-4B.

What is more, right now we can give you fast delivery. Write, wire, or phone today.



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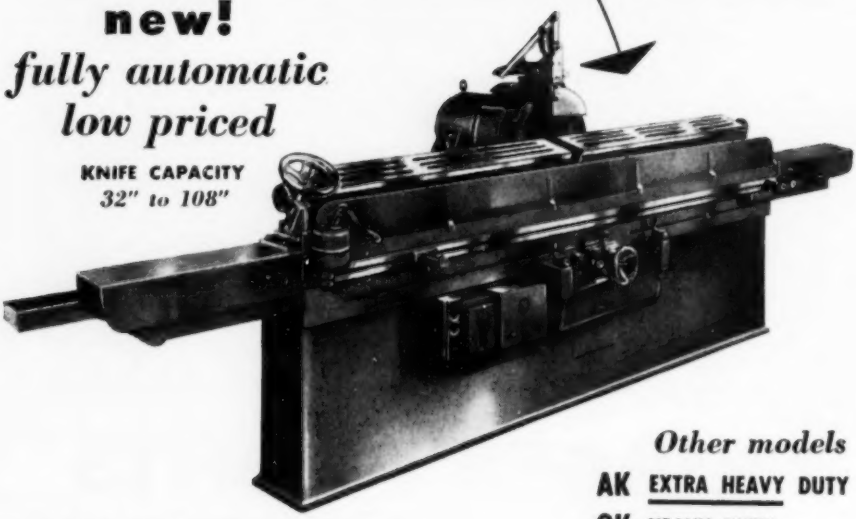
32" to 108"



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Model DN Features:

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World's Largest Manufacturer of Knife Grinding and Saw Sharpening Machinery

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HANCHETT GRINDERS

NEW ORLEANS has been chosen by the Southern Pine Association for its annual meeting. This will be held April 8-10. The New Orleans Spring Fiesta is being held during this time and conventioneers will be able to enjoy both the 38th annual meeting of S.P.A. and the Spring Fiesta. "Mechanical Progress" is the theme of the meeting.

In conjunction with its meetings, the association will conduct one of the largest machinery and equipment expositions ever staged for the lumber industry. Representatives of all lumber and woodworking manufacturers are invited to attend the show. Equipment used in manufacturing, logging and millwork will be on display in the Municipal Auditorium. More than a million dollars' worth of motorized equipment will be shown and operated on land adjacent to the building. Most of the meetings will be held in the auditorium, and sessions will be adjourned early in order to give the lumbermen ample time to visit the displays.

Headlining the S.P.A. program will be sessions on radio communications, laminated lumber and mechanization. In addition, an industry-wide meeting will be held under auspices of the Southern Pine Industry Committee.

J. R. Bemis, president of the association, will open the convention April 8 at a meeting of the S.P.A. board of directors. He will be followed by H. C. Berckes, executive vice-president of S.P.A., and Leo V. Bodine, executive vice-president of N.L.M.A. Elwood R. Maunder, of the Forest Products History Foundation, will speak on "History Is What You Make It."

A yacht cruises up the Mississippi near the docks where ships unload their cargoes from all over the world.

A symposium will be conducted on the importance of industrial radio to the southern pine industry. Among the speakers and topics will be: Clyde S. Martin, forestry counsel for Weyerhaeuser Timber Company, "The National Picture"; Elmer Surdam, manager of National Forest Industries Communications, "The Battle To Protect Our Industrial Frequencies," and A. W. Nelson, Jr., chairman of the Frequency Allocations Committee, Southern Division of N.F.I.C., "Southern Forest Industries' Use of Radio Communications."

The Cabildo, in the heart of New Orleans' French Quarter, is a favorite visiting place for tourists.

At a breakfast session on April 9, Southern Pine Inspection Bureau will hold its annual meeting.

During the morning, an industry-wide meeting will be presided over by R. M. Eagle, chairman of S.P.I.C. He will speak on "The Value of S.P.I.C. to the Industry and to the Government."

After a speech by Mr. Berckes on "Our Responsibility," there will be a discussion of the program being carried on by the National Security Industrial Association, an organization of manufacturers set up to study military requirements and make recommendations as to the most practical, efficient and economical procedures to meet those requirements. Among the speakers will be Admiral T. G. W. Settle, commandant of the Eighth Naval District, New Orleans.

The Trade Promotion Committee will meet for luncheon Thursday at the Auditorium. A special session of the

Officers of the association are, left to right: H. C. Berckes, executive vice-president; M. L. Fleishel, treasurer; J. R. Bemis, president; Tom DeWeese, first vice-president; and R. D. Crowell, Jr., second vice president.

Southern Division of the National Forest Industries Communications will be held during the afternoon.

The general meeting on Thursday will feature a symposium on "The Procedure, Equipment and Material Requirements for Laminated Lumber." Presiding will be Tom DeWeese, first vice-president of the association and chairman of the Trade Promotion Committee. Speakers will include:

N. V. Poletika, assistant director of research for the Timber Engineering Company, "Elevated Temperature and High Frequency Glue"; D. J. Hanchett, adhesive products manager for the Koppers Company, Inc., "Cold-Setting Glue"; Lloyd Quick, vice-president of James L. Taylor Manufacturing Company, "Mechanical Clamp Equipment"; H. K. von Maltitz, of the Plycor Company, "High Frequency Equipment"; Jack B. Cunningham, president of Woodwelding, Inc., "Utilization of Shorts and Narrow Stock"; J. C. Van Dyke, chief engineer of Unit Structures, Inc., "Economic Aspects"; Ward Mayer, president of Timber Structures, Inc., "Surfacing and Moisture Content Requirement" and R. C. Musslewhite, Jr., engineer of the Southern Pine Lumber Company, "Quality Control and Inspection."

One of the highlights of the meeting will be the president's banquet Thursday evening. Clayton Rand, editor of Dixie Press, Gulfport, Mississippi, will speak. Following the banquet, the new Southern Pine Association motion picture, "The Sound of America," will be shown.

The third day of the conclave has been set aside as "Mill Managers' Day." After an executive breakfast meeting of S.P.A. stockholders and newly-nominated directors, the general session will have mechanical efficiency as its theme.

R. D. Crowell, 2nd vice-president of

Standing outside one of the entrances to the Municipal Auditorium are H. C. Berckes and E. R. Schindler.

International House, world trade center in the heart of New Orleans, will be open to visitors April 8.

the association, will preside. W. R. Warner, chairman of the S.P.A. Committee on Mechanical Efficiency, will give the opening statement. He will be followed by T. R. Schindler, manager of the Mechanical Efficiency Department.

Speakers and topics to be presented at the morning session include: Joe H. Brady, Joe H. Brady & Associates, "Present-Day Trends in Chain Saw Use"; E. W. DeKoning, Irvington Machine Works, "End Printing and Waxing of Lumber" and John R. Barnes, Moisture Register Company, "New Developments in Moisture Registering Instruments."

The afternoon program will include: R. R. Macartney, president of N.L.M.A., "What Mechanical Efficiency Has Meant to the West"; Carl A. Rishell, N.L.M.A. director of research; Milton H. Mater, Mater Machine Works, "Standardization of Sawmill Machinery" and Henry C. Goodrich, Rust Engineering Company, "New Concept of Handling Barked Logs."

The 1953 exposition will be similar to the one sponsored by the association in 1950. In addition to southern pine and hardwood manufacturers, representatives of furniture, millwork, pulp and box industries will attend.

Among the exhibitors are the following companies:

Acme Steel Company, Chicago, Ill.
Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Armstrong Manufacturing Co., Portland, Ore.
Atkins Saw Div., Borg-Warner Corp., Indianapolis, Ind.
Belsaw Machinery Co., Kansas City, Mo.
Boyce-Harvey Machinery Inc., Baton Rouge, La.
Brady, Joe H., & Associates, Birmingham, Ala.
Branyan & Peterson, Inc., Memphis, Tenn.
Caterpillar Tractor Co., Peoria, Ill.
Chapman Chemical Co., Memphis, Tenn.
Christopher Unitemp Heating Systems, Inc., Prescott, Ark.
Corinth Machinery Co., Corinth, Miss.
Corley Manufacturing Co., Chattanooga, Tenn.
Cunningham Machinery Co., Shreveport, La.
Diehl, G. M., Machine Works, Wabash, Ind.
Disston, Henry & Sons, Inc., Tacony, Philadelphia, Pa.
Dixie Bearings, Inc., New Orleans, La.
Ekstrom, Carlson & Company, Rockford, Ill.
Electric Steel Foundry Co., Portland, Ore.
Forestry Suppliers, Inc., Jackson, Miss.
Gerlinger Carrier Co., Dallas, Ore.
Gerrard Steel Strapping Div., U.S. Steel Co., Chicago, Ill.
Hanchett Manufacturing Co., Big Rapids, Mich.
Hansel Engineering Co., Seattle, Wash.
Hoe, R., & Co., Inc., New York, N.Y.
Hoffco, Inc., Richmond, Ind.
Homelite Corp., Port Chester, N.Y.

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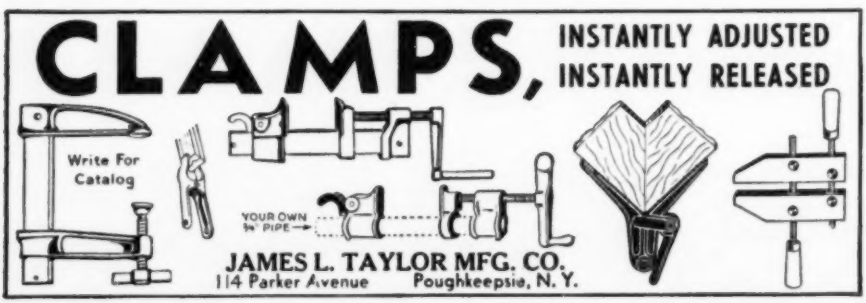

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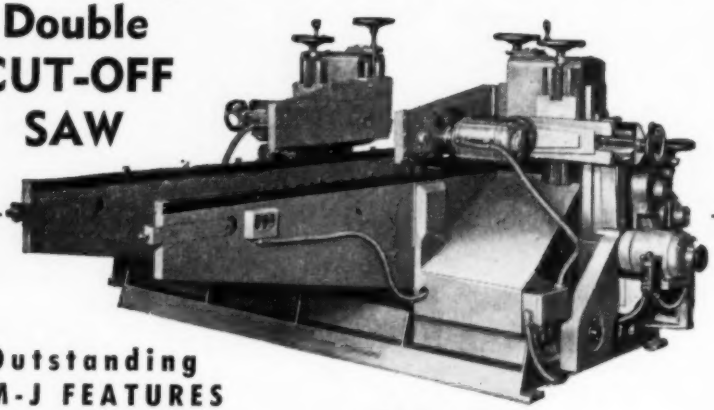

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Hydraulic BARKING

By L. E. Hill, Jr.

AS the term is usually understood in the pulp industry, a hydraulic barker is a device which presents bark-covered wood to the action of a high velocity jet of water in such a manner that the bark is selectively removed, leaving the wood for appropriate use. If reference is made to the installation of a hydraulic barker, it is understood to include the conveyors for bringing the wood into a building in which the machine is installed, the building, the saw for reducing the material to proper length or width and refuse disposal equipment. It is a plant or mill department, and as such involves an expenditure which is usually going to cost between a quarter of a million dollars and a million dollars, depending upon the size of the material which is to be handled and the rate at which it is to be processed.

The elimination of bark by hand peeling is too expensive in all parts of the world where labor costs are high. Alternatively its removal by the use of power driven cutterheads entails loss of wood when the wood is reduced to a size permitting this method of bark removal and further loss when the cutterhead cuts below the surface of the wood. The losses attendant upon cutting whole logs to cants and barking in power driven concave head planers have been measured, with the following losses, in percent of the original log: in the saw mill in reducing to size, 9.3%; in the chipping plant, making chips, 9.8%.

Many of the newer installations are being made at sawmills in such a location that the wood entering the mill has been cleaned of its bark. The following advantages are being realized from such an arrangement: the sawyer has a better opportunity to judge his cutting procedure more efficiently; lighter gauge saws can be used with a reduction in kerf; wear and tear on saws, due to the gravel and dirt imbedded in the bark, is almost completely eliminated; the mill can be kept cleaner with fewer men assigned to that work; mill operation is faster and with fewer conveyor jams; and finally, all of the material which cannot be used for lumber but which is sound wood can be made into chips for further production of pulp or board.

The hydraulic barker has found its greatest acceptance in the Pacific Northwest, and has been developed in its various designs to handle the range of sizes and shapes which are encountered in this area. Those barkers which are installed ahead of a sawmill must process the logs of maximum size and length which the mill can handle. This makes it necessary for the barker to handle pieces with diameters up to 7 or 8 feet and lengths up to 55 feet. The other end of the range is found with the barkers used on salvage or farm wood where the length may be as little as four feet and the diameter as small as four inches.

The variety of shapes of the logs is nearly as great. We observe barkers handling logs with flaring butts, curved stems and projecting burls. Such pieces generally make some demand upon the skill of the operator and entail some slowing of the rate at which the machine will process the log.

Many logs which are affected with surface rot can be cleaned. Others which are so badly rotten in the heart that only a shell remains can be proc-

Hydraulic barking is the operation of removing the bark from logs or remnants of logs, such as slabs and edgings, by means of high velocity jets of water. The material which is treated is highly variable in size and shape. The benefits which have been obtained by this method of bark removal are listed. Brief description of the types of the most successful hydraulic log barkers is given, as well as mention of the installations that can be seen in the Pacific Northwest.

essed, although at times they split into pieces shaped like canoes, which must be handled separately.

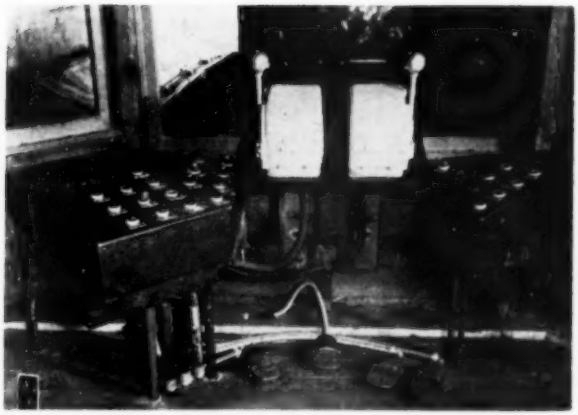
Another variable in the barking process which has almost infinite gradations is the thickness and adherence of the bark. The bark of the Douglas fir is at times four inches thick. Smaller trees such as white fir may have bark which is smooth and as thin as a quarter of an inch. In general, the bark is thicker on the older trees.

Trees which are cut in the spring or early summer show that the bark was slipping, both when freshly cut and months later if they are processed after long storage. Such logs may be nearly bare of bark if they have been rafted through stormy waters on the Sound. But those logs which are cut in the late summer and on through until early spring have tightly adherent bark, so that at times a little wood will pull away rather than release a patch of bark.

The density of the wood will vary with the rate of growth and the moisture content. Western hemlock is notorious as a heavy wood, with a high moisture content. Many logs will go to the bottom when first dumped into salt water. If these logs are tied with lighter individuals into a bundle, the group will float. Such a bundle will contrive to bring the group to the log pond, where the sinkers will go to the bottom as soon as the binding wire is released.

The policy of extensive cleanup of the cutover area of forest, in order to prepare it for reseeding with a minimum of danger from fire in the logging remnants, is resulting in a poorer average quality of log than was obtained even a few years ago. The log which must be barked in a hydraulic barker is probably rough, oddly shaped, heavy and has a relatively thick layer of tightly adherent bark.

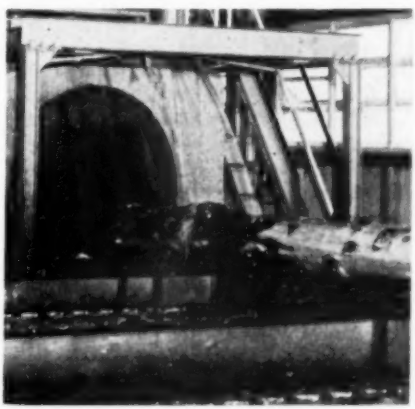
This is a Bellingham type of hydraulic barker at Mill B, the Weyerhaeuser Timber Co., Everett, Washington.



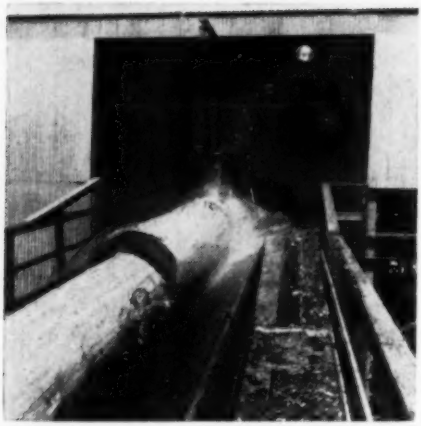
Controls of the Bellingham type barker. Incoming log haul is seen at the left.

Hydraulic removal of bark did not appear as an encouraging method until the energy of the jet had been past a threshold value. A whole river flowing past a log will not take off the bark. A much smaller quantity will suffice if its energy is high. Presumably the experiment of hypodermic injection by diesel injector nozzle could be repeated on a log with complete disappearance of the fluid. The key to bark removal must be a sufficient quantity at sufficient velocity. The energy of the jet is measured by the pressure in the pipe line ahead of the nozzle and the rated capacity of the pump in gallons per minute when it is operating efficiently at that final pressure. There seems to be a fairly general agreement that a pressure close to 1400 pounds per square inch is desirable when the bark is tight, and when there is not mechanical assistance to the operation of the water.

The quantity of water which will be used will vary considerably with the installation, according to such factors as the production requirements of the mill or a need to conserve water. There is some variation in the efficiency of a barker type, and of course where a type of low efficiency is installed it is necessary to provide either more hours or more gallons to obtain the desired quantity of cleaned wood. If the velocity of the water is adequate, and the volume is sufficient to produce a good cutting or abrading action, then the efficiency will be found to improve in proportion to the velocity of sweep of the jet over the surface of the log. The hydraulic barker which was installed at our mill 10 years ago uses a sweep velocity of about 20 feet per second, and there is reason to think that an increase up to about 30 feet



Simons barker installed at pulp mill of MacMillan and Bloedel, Harmac, Vancouver Island, British Columbia.



Outgoing end of Hansel ring barker installation at Springfield, Oregon, Weyerhaeuser Timber Company.

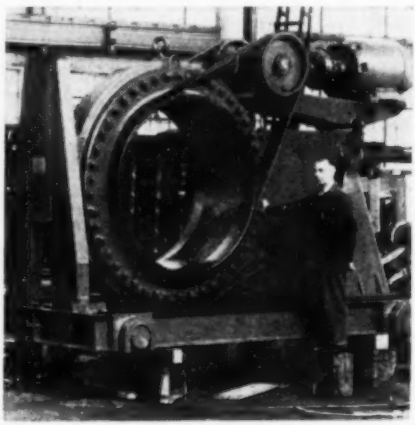
per second may be advantageous. In the arrangement used in this machine the nozzles are moved on a carriage which moves the length of the log. The jets travel about 18" from nozzle to log, which is rotated after each passage of the jet in order to present an unbarked area.

When a log is marched past a stationary jet, or array of jets, the relative velocity of the barked surface to the area of the jet action is, of course, much below these just mentioned, and the efficiency, if measured by area per unit of energy employed, will be lower. Where this method of barking is employed the reduced efficiency is accepted without much sorrow, for the maintenance costs of the machine are quite low.

Axial movement of a log is the easiest method of moving it from storage to mill and from point to point in the mill. Several modern barkers are designed to occupy a position along a log conveyor and sweep the passing logs with jets which are given a relatively high velocity across the barked surface.

The whole log barker, which is located on the log haul entering Mill 1 of the Weyerhaeuser Timber Company at Longview, Washington, carries the logs on a number of pairs of rolls which can be adjusted to an angle to the axis of the conveyor and thus give the log a combination forward and rolling motion past the barking nozzles. When the motion is arrested by log irregularities, lift skids are elevated to free the log and allow it to resume the desired travel. The two nozzles are below the log, and point about 12° to the rear of its axis. They are given a rapid sweep motion along an element of the cylindrical surface, one going toward the leading end and back to the center position, the other toward the rear end and back to the center position. The barked strip is a spiral about four feet wide. The angle of the wheels is adjusted so that the log is completely barked regardless of small or large diameter.

This barker is designed to handle a log weighing up to 37,500 pounds, a diameter up to 9 feet, or length up to



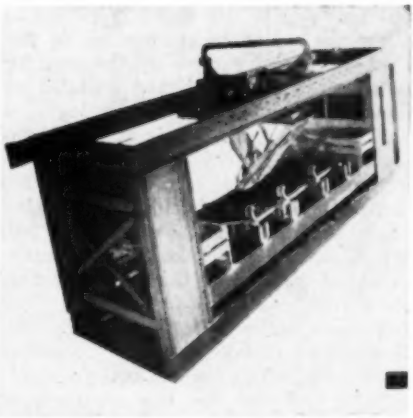
Hansel ring barker, manufactured by the Hansel Engineering Company, Seattle, Washington. This 60" machine was installed at the Weyerhaeuser Timber Company, Snoqualmie Falls mill.

55 feet. The pump is driven by a 600 h.p. motor, which delivers 600 gallons per minute at a pressure of 1400 pounds per square inch. It cleans practically all of the logs entering this mill with the addition of one man to the crew—the barker operator.

The Hansel, or "ring" barker, manufactured by Hansel Engineering Co., 1500 Westlake N., Seattle, Wash., is also designed to operate on logs as they pass axially by its point of installation. In shape it is a ring, and logs pass through its center. The size of the ring limits the diameter of the log which it will clean. For this reason it is more adaptable to a mill which has harvested the oversize virgin timber and is now operating on the second growth.

The ring is actually a double ring: the inner ring rotates and carries the two or four nozzles. It is driven by belts. The outer ring is stationary, at least so far as rotation is concerned. It is, however, so mounted that it can be moved up and down or back and forward across the conveyor in order to keep the ring concentric to the axis of a curved or crooked log. The space between the rotating inner ring and the outer ring is the water channel which distributes the high pressure water to the nozzles. Each side of the water channel is sealed by a packing strip that is forced against the smooth metal surface by just enough pressure to control leakage to the amount necessary for lubrication of the sliding joint. The packing is phenolic impregnated fabric, of a grade that has been found to perform well in this difficult service.

Weyerhaeuser large log barker installed at the firm's Longview, Washington, branch.



Here is a shop installation, prior to shipping, of a Bellingham type barker with 60" diameter and 24" maximum length capacity. This machine was made by the Sumner Iron Works, Everett, Wash., who have manufacturing rights to this type of machine.

When working under the ideal conditions of clean water, and with a good initial adjustment of the packing and a period of wearing in, the ring barker has been run for very long periods without need of repair. It is now being built in larger sizes, requiring that the operators do some pioneering in the technique of packing adjustment and barker operation. It may be expected that even larger ring barkers will be built, and that their operators and owners may have periods of unhappiness during the shakedown cruise.

The log goes through the ring with-

out touching it. Its speed is varied to allow the water to remove all of the bark from the surface of the log. In some cases the rapid accumulation of loose bark on the top of the log is a limiting factor in the rate at which the log can be advanced through the barking zone. There is a problem of bark disposal when the machine is working on a thickly coated Douglas fir log. When the log is crooked, the operator must use the controls that move the ring to a nearly concentric position. The operator's station should therefore be located so that he can see whether clean removal of bark is being accomplished and also see the approach of crooks or obstructions.

The Hansel barker is compact, relatively light, and quite efficient. Clean water appears to be an absolute essential to its successful operation. All hydraulic barkers and their pumps will operate with greater freedom from trouble and expensive part replacement if the water is clean, but here with the extensive area of water-lubricated surface between the inner and outer rings there is no substitute for grit-free fluid. During the past several years a number of these barkers have been installed and several more are in the planning stage.

An even more recent arrival on the scene of hydraulic barking is the machine developed by H. A. Simons. This has been termed the lawn sprinkler type. It is mounted in a gap in the log conveyor, and one part of it is under the log. A pipe which is shaped like the capital letter T is rotated by a motor drive. Its shaft passes through two packing glands, and in the space between them the pipe is perforated so that high pressure water can enter the pipe and flow up through the stem of the T and out each of the ends of the top. A nozzle is mounted near the outer end of the cross pipe at each side, and points up but toward the center 15° from the vertical. Therefore, as the pipe revolves the jets of water describe a cone, except when they impinge upon the surface of the log.

A similar nozzle assembly is supported in an upside down relation above the log. This assembly is provided with a vertical adjustment to compensate for the varying diameter of the log which is passing through. These barker assemblies may be rotated 460 r.p.m., causing the nozzles to sweep at a speed of 36 feet per second when they are mounted 30″ apart. It is reported that the forward speed of the log may be 60 feet per minute. The log is swept by the nozzles as it enters the cone and again as it leaves it.

It appears to be a feature of this barker that the varying angle of attack on the bark surface aids in removing the fragments of bark. In experimental work the jet working perpendicular to the surface of the bark has appeared to be the most efficient, and in practical barkers there have been repeated demonstrations that when the nozzle is forced out of adjustment by a projection from the log there was an immediate loss of efficiency. But in spite of the theory and the tests, the Simons barker is in use in several mills in British Columbia and the users are satisfied with the results that are being obtained.

The 4 nozzles are proportioned to use a total of 600 gallons per minute at a pressure of 1350 pounds per square inch. The reported rate of passage of logs through these barkers is very good. Its operator must back an incompletely barked log through the machine and then pass it forward again, thus giving it three passes through the barking zone. Such an arrangement of conveyors could cause a serious loss in production if any large proportion of the logs were to require more cleaning than was obtained on the first pass.

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This account is based on a description furnished by Mr. Simons and a very brief observation of the barker at the Harmac mill on Vancouver Island. Real understanding of the merits and weak points of a barker type can only be gained by fairly long association with the machine. This association has been obtained by the members of the MacMillan organization and as a result of the work with the experimental installation several others have been installed.

One more description of a barker will be given. This is the Bellingham type, so called because its first installation was at the mill of the Puget Sound Pulp and Timber Company in Bellingham. The arrangement for entering logs is similar to the Weyerhaeuser barker, or to the loading of a log onto the carriage in a sawmill. But the log is cradled in the valley between two rows of wheels which almost touch. Each row of wheels is mounted on a shaft suitably heavy and adequately supported on bearings. For large logs the wheels are about 48 inches in diameter, with blunt teeth around their perimeter. The distance between the shafts is 49½ inches. Seven wheels on each shaft are satisfactory for a machine that handles only longer logs. There is an advantage in leaving a space between the wheels, since limbs or other projections will seek the space and bump less as the log is being rolled. Even rather rough logs can be rotated at sufficiently high speed to give good barker efficiency.

The two shafts are rotated in the same direction and at the same speed by a variable speed drive at the end of the shafts and outside of the barker zone. Consequently the space over the log is free for the passage of the nozzle, which is mounted above the log and in full view of the operator. Provision is made for raising or lowering the nozzle so that it may accommodate logs of different diameters, and can be raised to clear projections on the log. It is usually brought close to the surface of smooth, hard barking logs.

In normal operation the nozzle is at one end of the barker when a log is loaded, and as soon as the log begins to rotate it is moved along the length of the machine at a speed which removes the bark without unnecessary overlap onto the area which is cleaned.

Logs which are so rough that they would bounce with great violence if given a rapid rotation are handled slowly. Some that are extremely irregular are indexed, a strip on the top is barked, and the log indexed again. When the log contains a surface bark seam, it is rolled until this defect is stationary on the top of the log, and then the nozzle is swept over it to do a thorough job of removal of the imbedded bark.

The Bellingham type barker has been installed in a number of mills, where it is giving a satisfactory account of itself. The skillful engineering which eliminated high speed parts, and built the remainder with the tremendous strength necessary for this heavy service, has encouraged many mills to follow the lead of its designers. It is also built in two smaller package units which are able to handle wood of either 10 or 20 feet length.

The design and installation of a hydraulic barker presents many of the problems which make engineering the interesting profession that we find it. The primary problems are concerned with the efficient and reliable handling of logs, and particularly, large logs. This has already been mentioned in connection with the Longview barker ahead of the fir sawmill. But smaller logs will still weigh a great deal. Green hemlock averages about 50 pounds per cubic

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foot, and of course the sinkers must weigh more than 64 pounds per cubic foot if they are to sink in salt water. The structure of the barker must be heavy enough to withstand the dynamic loads caused by rapid movement of the heavy logs, and do so during the processing of hundreds of pieces each working day.

The bark that is being removed flies off in pieces which range from fiber size to slabs of considerable size and weight. The water flow from the nozzles may exceed 1000 gallons per minute. The housing surrounding the barking zone is constructed to catch the flying water and bark, and also to resist without damage the impact of a short length if the impact of the jets upsets it and sends it crashing down into the bark removal conveyor.

No matter what type of hydraulic barker is selected, it will be more efficient if the operator is able to see the progress of the barking operation and the extent of remaining bark on the log after it has passed the cleaning area. The operator must be protected from the flying bark and other debris, and from water deflected in his direction by the irregularities of the log. If he is to be protected and at the same time see the operation he must have a window of shatterproof glass, and this must be provided with some method of cleaning such as a wiper. The selection of the proper location for the window should be very carefully made to allow proper control of the nozzle and regulation of the rate of passage of the log thru the barker.

The action zone of the barker must be brightly illuminated, but in a way that puts the light on the log and not on the flying water or glaring into the operator's eyes. The lights must be protected by heavy glass in the same manner as the operator, and this glass must be

kept sufficiently clean to allow the efficient passage of the light.

The operation of the barker is one that calls for intelligence and skill, yet it can become very tiresome if the controls are not given the forethought that they deserve. The first barkers received such attention during the early design stage, in an effort to make as many of the functions as possible automatic. Where this could not be done the arrangement of the control elements was made so convenient that the operator is able to work for even more than the normal work day without becoming so fatigued that the operation suffers. Others since have given the controls a great deal of attention, with the advantage that the breaking-in period of a new operator is quite short. So far as is known, the controls that are now in use are electrical rather than pneumatic or hydraulic.

Delays arising from slow mechanisms or inconvenient arrangements are serious causes of inefficiency, as they may repeat hundreds of times during each working day. Even with the smoothest possible cycle there is rarely any excess of capacity. The usual history of a barker installation begins in the preface with a study of the log size, lists in its early chapters a machine which is in harmony with the material it must handle and the volume of chips that it must supply, and then ends with logs too small for its ponderous mechanism and a demand for chips from a mill that has been needled into a pace that is far ahead of the production rate at the time that the barker was planned. The hydraulic barker is too large an investment to be easily abandoned and must be so strongly put together that its modification and improvement is not readily accomplished. Provision for higher capacity than is needed at the original planning date, without at the time being regarded as needlessly ex-

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Development of a new epoxide resin adhesive suitable for bonding nonporous surfaces has been announced by the Borden Company's Chemical Division, 350 Madison Avenue., New York 17, N.Y. The product, Epiphen XR-823, has shown excellent results in bonding wood, metal, glass, natural or synthetic rubber, ceramic materials, phenolic and glass fiber laminates, either to themselves or in various combinations. The cured bond is resistant to boiling water, acids, alkalis and most organic solvents.

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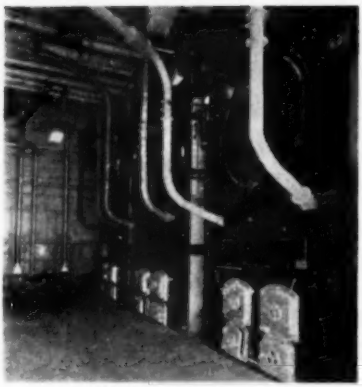

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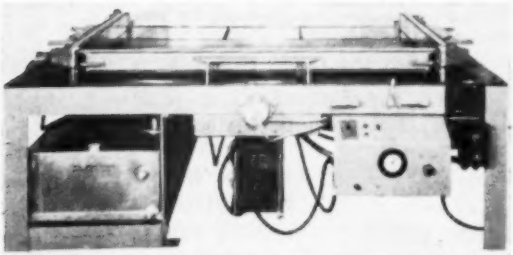
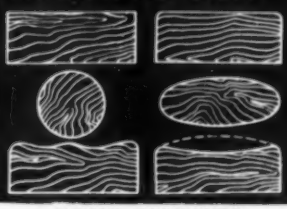


for such typical shapes as these



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The TRAINING and WORK of a WOOD ENGINEER

By Raymond J. Hoyle

We are pleased to present this article by Raymond J. Hoyle, who is head of the Department of Forest Utilization, State University of New York, College of Forestry. It is true that this solution is not the cure-all for the woodworking industry, but trained woodworkers will be a great step forward in meeting competitive materials and developing better products.

THE profession of forestry in the U.S. is relatively new, since it was born only 50 years ago and at that time consisted of a mere handful of men who were groping their way. For quite a few years the job of a forester was chiefly that of protecting, managing and caring for timber and timberland, but gradually other closely allied phases of work were recognized as important fields of activity in the forestry profession. Today there are several distinct fields or phases of forestry that are understood by foresters but not generally by laymen or the public.

Forestry today stands where engineering stood many years ago. Now we have civil, mechanical, aeronautical, metallurgical, chemical, electrical, sanitary, radio, industrial, ceramic, agricultural, nuclear, geological and other kinds of engineers. Their lines of training and fields of interest are well understood. In forestry we have the silvicultural, managing, science (entomology, botany, zoology majors), economist, chemical, pulp and paper, utilization, wood technology, merchandising, recreating, wildlife and other kinds of foresters. Several of these fields are relatively new and are not generally understood.

The profession of forestry has grown to the point where there are distinct fields of work concerned with trees and wood. Forestry schools are recognizing these developments and offer training in many different phases of forestry.

Forestry work that deals with wood and its manufacture and use calls for training in the sciences and engineering subjects. Such engineering subjects as mathematics, physics, and chemistry are always required by forestry schools. Courses in electricity, mechanics, heat and power and others are also frequently studied. Quality control, time and motion study and statistical analysis are phases of industrial engineering

that are very helpful to one who is to work in any of the woodworking factories.

Students who have had these courses have definitely had good basic engineering training. In addition to the science courses and the engineering courses there are courses dealing with the harvesting, manufacture, structure, seasoning, gluing, treating, machining, fabricating, finishing and utilization. Some schools offer courses in physics and mechanics of wood. A student who has taken this combination of courses and some others, including business and economics, to broaden his training, is a graduate of a forestry school and is called a forester, but he is one of these newer kinds of foresters. He is an engineer forester, or some might prefer to call him a forest products engineer or a wood engineer. Sometimes he is called a wood technologist or a wood utilization specialist, or wood utilization engineer. The term which is used in attempting to describe the training and field of work for which the man is fitted depends on the school where the training is taken and the combination of courses that is chosen. The fact remains that while the forestry schools generally use the terms wood utilization and wood technology to describe the line of training, the term wood engineer or forest products engineer is a more appropriate term and one that is more significant as well as meaningful to the layman and the employer.

Since the end of World War II quite a few men have continued on for graduate work in some of the schools. This graduate study leads to the master's or even the Ph.D. degree. These men naturally have a much better foundation and generally rise to higher and more important positions. Men with advanced degrees usually begin work in the fields of teaching, research or with industrial plants. They are men with a technical and engineering training who are qualified to help carry the lumber and woodworking industries to new heights in solving their problems and meeting competition.

Why is it that men who are trained in forestry schools to do the same work with wood that men in engineering schools are trained to do with steel are not called engineers instead of foresters? Today we are using several names to denote this wood engineering training. These names are confusing to the prospective employers, to students, to alumni and even faculty members of forestry schools. There is only a small number of the forestry schools giving adequate work to qualify a graduate to undertake wood engineering work, but many of the smaller schools are following in the steps of the older schools and it will be only a short time before other schools will be giving this training. With this rapidly increasing number of wood specialists, wood utilizationists, wood technologists, forest products technologists, or whatever name we give them, it is time that the schools decided upon names that would be appropriate and acceptable. I am told that the term wood engineer is accepted and used in some countries in Europe when the student has adequate engineering training and knowledge of wood.

Forestry is a new profession and wood engineering taught in forestry schools is yet in its infancy in this country, but it is now time to dress up the child in long pants so he is more in keeping with his stature. Care must be used in establishing proper standards for a wood engineering degree. Some forestry schools graduate men who are short on engineering subjects but have had many courses in business, merchandising, personnel and economics, as well as the various courses dealing with wood.

These men are well prepared for manufacturing, marketing, business and sales work including wholesale, retail and specialty merchandising, rather than the engineering and research type of jobs. This preparation assists in a more rapid rise to managerial positions. Perhaps this group might be called industrial or administrative wood engineers in conformance with the terms used in engineering schools.

The forestry schools should decide on proper terms for their graduates who are preparing for the different fields of forestry. An employer would not ask an engineering school for an engineer, but he would ask for a chemical engineer, or an electrical engineer, and he would know what sort of training he had received. Today a furniture plant manager writes to a forestry school and says, "Please recommend a good senior who can do time study work and who is familiar with gluing problems. I understand your school gives men some training along these lines."

Another prospective employer says, "One of your graduates, Bill Jones, has been with us three years and we like him. Can you find us another man with his training?"

Still another employer says, "I want to hire a forester, not one who manages land and timber but one who has been trained in using it efficiently."

Is it any wonder that these three employers of forestry school graduates had some difficulty in describing the kind of a forester they wanted? What they wanted was a wood engineer, but they had never heard of such a person and until the forestry schools decide to adopt universal terms for different kinds of foresters the wood-using industry will flounder in a confusion of names. Moreover, an employer may hire a forest land administrator when in reality he is looking for an administrator trained in the problems of the wood-using industry.

The majority of woodworking plants and others who can use wood engineers do not even know that some forestry schools are offering such training nor do they know what men with this kind of training can do for them. This situation is a challenge to forestry schools. The wood industry is gradually learning from its friends and competitors that men are being trained specifically for their industry, and that these men are helping them solve their problems. I do not wish to give the impression that young wood engineers are the answer to all ills of the industry or that their training is always the very best or that the graduates will be able to solve all problems. These young wood engineers in a few of the forestry schools are receiving training today that is far in advance of what it was a few years ago and these young men are in demand by the leaders in the woodworking industry.

The woodworking industry has been facing growing competition from many other materials. These materials are developed, improved and adapted by staffs of technical men and engineers with specialized training for that particular industry. The forestry schools are training specialized men for the woodworking industry so that this industry, too, may better meet this competition.

It may be of interest to show what sort of jobs graduates of a forestry school are holding in the industry today. The State University of New York, College of Forestry, at Syracuse, as an illustration, has been one of the pioneers in training men for industry. For over 30 years this specialized wood engineering program has been developing at Syracuse. At first it consisted of only four or five courses that were different from the training of a forester who was

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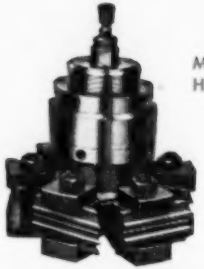
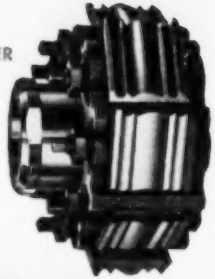
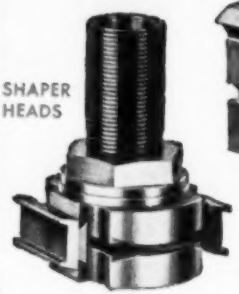


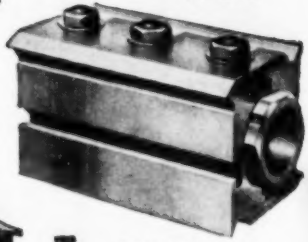
MOULDER HEADS



MATCHER HEADS

SHAPER HEADS





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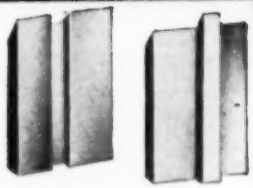

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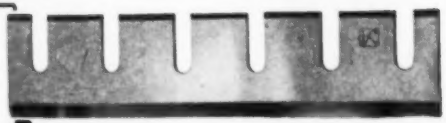
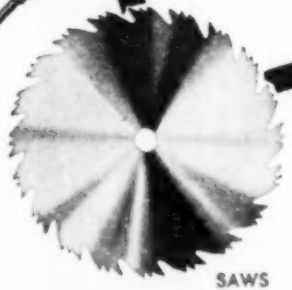


THICK KNIVES



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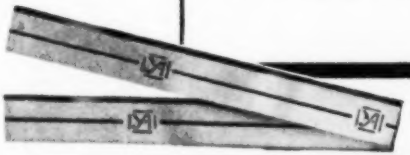

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to manage land and trees. In the last seven years, and especially in the last two years, this school has changed its line of specialized training for the wood engineering jobs so that now these graduates may well be called wood engineers. Like other forestry schools we still call them foresters but then in the same breath we explain the kind of training they have had and conclude by saying they are wood utilization men, or forest products technologists or some other term that has a rather vague meaning to employers. No matter what name we give them, they are still wood engineers. New graduates and alumni in applying for work often call themselves wood engineers because the employer at once has a better idea of the kind of work for which they are suited.

We have the addresses of 600 of these graduates who have taken this specialized training, but we are only certain about the title or type of work performed by 440 of them so that we can classify them as to kind of work or responsibilities. Some of these men graduated over 30 years ago while others graduated 2 years ago. None of the following men is listed in more than one category.

Thirty-four men are owners of their own businesses and 12 more are partner owners. These 46 men started at an appropriate position and gradually rose to the position of ownership of sawmills, woodworking plants, retail yards, wholesale lumber and other businesses. Most of them are the older men but in some cases they are surprisingly young. These owners may be doing purchasing or selling or many of the other categories listed below.

Twelve men have the title of president and 6 more the title of vice president. Ten men have the title of secretary and several of these are secretaries of lumber associations. There are 40 managers and 15 assistant managers. Six additional men are sales managers. There are 16 superintendents, 6 purchasing agents and 3 comptrollers. Six men are directors; 2, assistant directors; 15, supervisors and 1 is an administrative assistant. Eight men work in various government bureaus and here they are in the capacity of chiefs of their phases of work. The total of all the above is 192 men who are in some phase of management of the lumber and woodworking business. This is a good percentage when we realize that even the youngest men are in this classification.

Another group of 81 men with 17 different titles has been classified as being in technical and professional work. They are as follows: 20 men are in forestry colleges teaching utilization, technology and engineering subjects; 14 are in research work; 10 more are technologists; 3 are technicians; 2 are chemists and 3 are consultants. There are 3 analysts, 6 inspectors, 1 estimator, 2 statistical analysts, 1 forest utilization specialist and 1 lumber coordinator. One man is in timber control, 2 in industrial relations, 2 in personnel, 1 is a liaison officer and 4 are designers.

At this point it should be remembered that these are the titles of the jobs which are given the men by their employers. In one company a job might carry the title of technologist, in another company a similar job might be called research worker or chemist. Titles are bound to vary some between companies.

Thirty-eight men working for various companies carry the title of engineer. There are 17 different kinds of these engineers, as follows: cabinet, chemical, city, dry kiln, equipment, industrial, inspection, logging, materials, methods, office, product, project, sales, survey, structural and time study. Since 33 companies have seen fit to classify their men who are working with wood into

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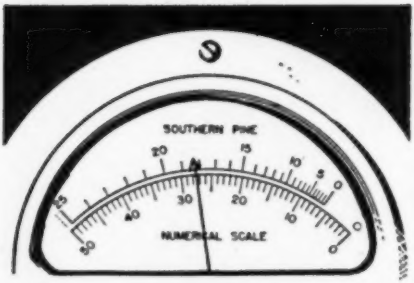

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17 different kinds of engineers, it is evident that the term engineer is a popular one and to the employer is a very acceptable term.

Another phase of work in which many men find satisfactory employment is that of selling. Ninety-four men are listed as salesmen. They are in wholesale and retail lumber merchandising and also with special products like preservatives, adhesives, machinery, millwork, etc. Some salesmen may be presidents or owners but if so they are not in this list of 94.

Eleven men are employed in offices with such titles as accountant, clerk, draftsman and timekeeper. Twenty-four more men are employed in sawmills and woodworking plants and logging jobs with such titles as kiln operator, machine man, tallyman and router.

This group of 440 men can be summarized as follows:

Type of Work	Number of Men
Ownership and managerial	192
Technical and professional	81
Engineering	38
Salesmen	94
Office jobs	11
Miscellaneous jobs	24
	440

There are at least 75 more men working with companies who have no specific title or who have not informed us of this title, but we are familiar enough with their work to know that if given a title, it would be that of engineer in quite a few cases.

The profession of forestry has long since come of age and has developed many clearly recognized fields. Wood engineering work is one of these clearly recognized fields. The courses in wood and engineering that are offered and the training given in several of the forestry schools is very similar. Other

schools are rapidly adopting their pattern. The lumber and woodworking and allied industries are calling for these men more and more. It is only a matter of a short time until the schools will standardize their requirements for a degree and give their graduates a more meaningful title, such as that of wood engineer or forest products engineer.

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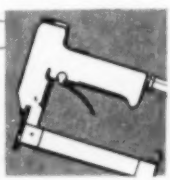

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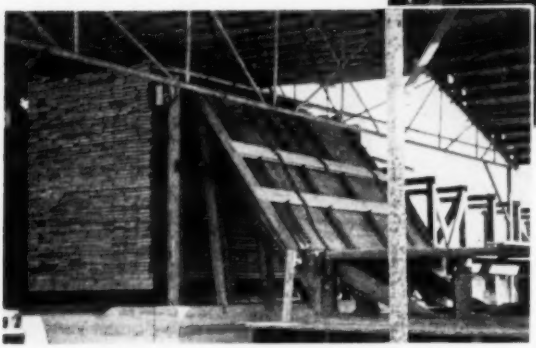

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OPERATING A WOODWORKING PLANT . . . *at a Profit*

By C. L. Babcock

THE problem of operating a woodworking plant at a profit is becoming increasingly difficult, with rising costs of labor and materials, taxes, transportation and other factors incidental to the manufacture of wood products increasing general expense.

The amount and kind of machine equipment required has always been a major problem which can be helped, if not completely solved, by careful study, evaluation, rearrangement and/or replacement. In most cases the added capital investment required serves to materially reduce manufacturing costs and permits the plant to be operated more efficiently and at a greater profit.

There are many ways in which this can be done and the following case history illustrations may serve to help solve some specific plant problems. Let us first consider the average millwork plant and compare the conventional type of millwork operation, with its run-of-the-mill machine equipment, with a modern millwork plant which takes full advantage of modern production equipment and layout.

As shown in the sketch, A and B represent a conventional two-story building, with A showing the end elevation and B the front elevation and both showing large swinging doors used for travel of lumber buggies in and out of the plant. The door shown in the upper story is used to lower finished cabinet work down to the motor truck or freight car for shipment.

In the machine layout, as shown in C, No. 1 is a swinging cut-off saw, No. 2 represents the resaw, No. 3—a 6-inch moulder, No. 4—a 15-inch moulder, No. 5—the rip saw, No. 6—the planer, No. 7—a 48-inch roll-feed drum sander and No. 8 is an elevator, though many such plants lack the facility. This line-up of machines is the result of the original use of a long line shaft for power, with each machine being driven directly off the shaft. When electric motors were later adopted for power transmission, no attempt was made to change the location of machines to reduce handling costs. This same layout has been used in setting up new mills with the machinery arranged in a similar manner just because that was "the way Grandfather did it."

In a large number of woodworking plants today there are too many types of machines and, strange as it may seem, too many machines. A competent survey may serve to eliminate those machines whose book value has long since been zero and whose production capacity is close to that figure. Rearrangement of the machines remaining and the addition of a few modern high-speed production machines will effectively eliminate excessive handling and increase plant production.

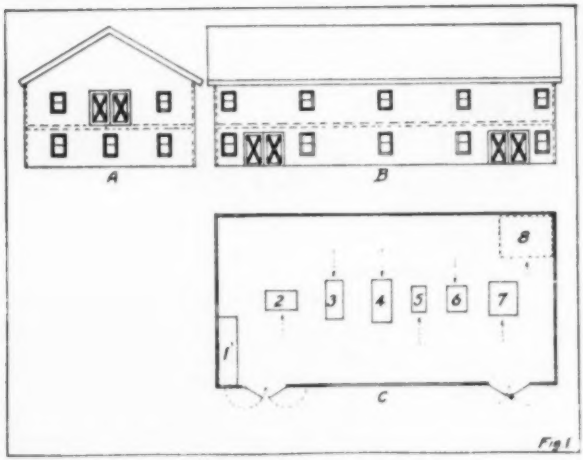


Figure 1.

The modern millwork plant building is a single-story structure, with the office and cabinet room on the same level as the mill room. In the sketch end elevation D shows the office entrance and E the side elevation with the office at the left, followed by the cabinet room and the mill room. Large overhead doors are used at the end F of the mill where lumber is discharged into the mill with either straddle carrier or lift truck. The doors at E are recessed for weather protection.

In the machine layout, shown at G, No. 9 is a straight-line cut-off saw, and No. 10—provision for a second saw, No. 11—a roll-feed power rip saw, No. 12—a chain-feed rip saw, No. 13—a 6-inch electric moulder, No. 14—either a 10-inch or 12-inch electric moulder,

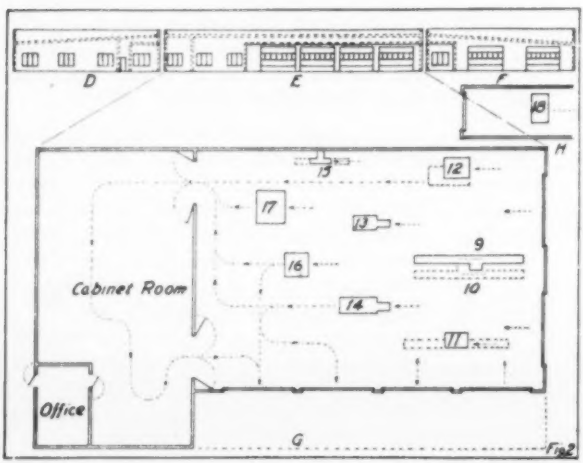


Figure 2.

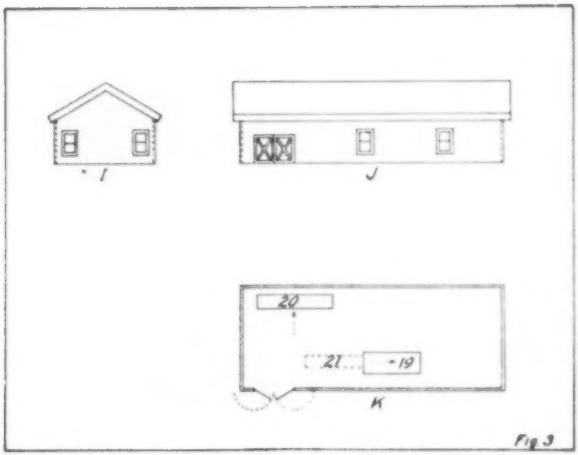


Figure 3.

No. 15—a radial arm saw, No. 16—a single surface planer, No. 17—a 37-inch, 3-drum endless sander. All machines are connected to an adequate blower system.

Part of the lumber entering the mill is processed right through to the cabinet room. Other lumber, particularly air-dried dimension, is discharged through the large overhead doors and is held just inside the mill during bad weather for loading as required.

Stock that requires ripping to straighten for glue jointing or running through the 6-inch moulder (No. 13) or trim that needs sanding can be processed readily at machines 12 or 11 and 9 and on through to 17. Where it is required to be processed further in the cabinet room, the stock can then pass through the mill to that department.

If, on the other hand, the lumber is air-dried dimension, it can be processed at machines 11 and 14 and possibly at 16 and then be discharged through the overhead doors to the loading platform without interfering with stock en route to the cabinet room. Heavy mouldings, such as treads and sills, are run through the heavy moulder (No. 14) and delivered directly to the cabinet room.

Comparing the layout of the old-style millwork plant with that of the modern plant, you will note the endless-bed sander (No. 17) replaces the old roll-feed sander (No. 7) and not only sands to uniform thickness, but also handles short stock and all other work previously done on the roll-feed sander faster and better. The resaw (No. 2)

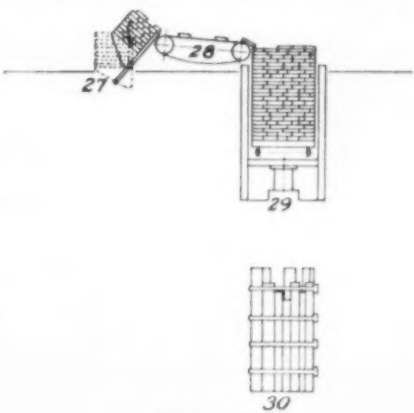


Figure 4.

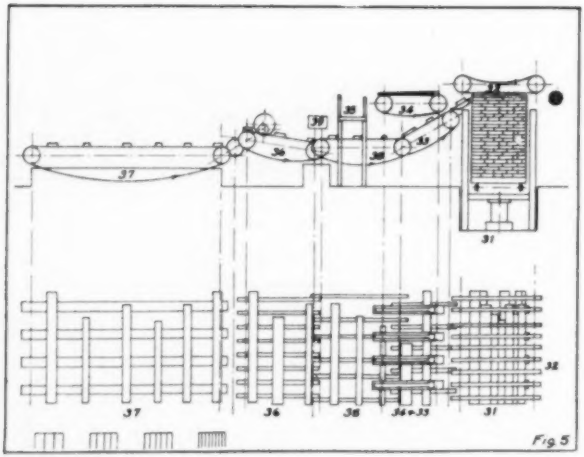


Figure 5.

is replaced by a combination resaw and rip saw (No. 18) located in a separate building H out in the yard and not in position shown. This is a utility machine used to reduce large stock to smaller dimension, usually in small quantities. When this machine is located in the yard, it is more accessible and permits most of the lumber to be handled without entering the mill.

Within the modern millwork plant, everything moves along the line in straightline production without backtracking. Material designed for the cabinet room does not interfere with air-dried rough or dressed lumber that is processed only in the mill room and is discharged for loading and shipment. Stock ready for shipment does not clutter up the mill as it is temporarily stored in the space before the overhead doors awaiting the arrival of truck or freight car. The savings in

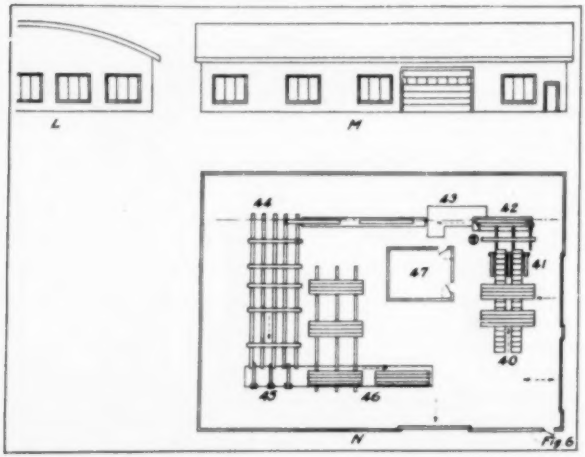


Figure 6.

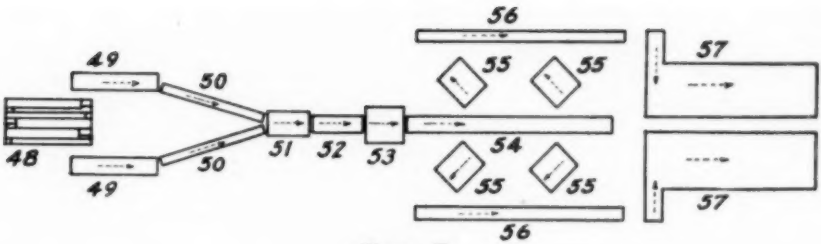
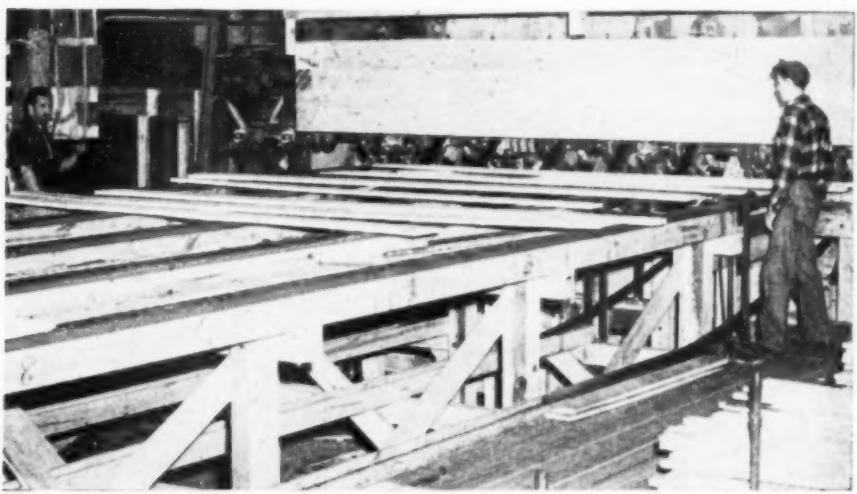


Figure 7.

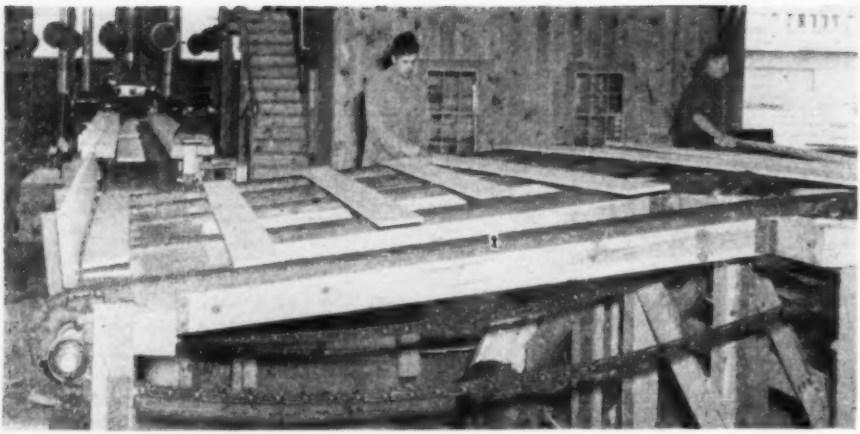
materials handling alone is well worth considering, as labor has been reduced by this layout as much as 40% in many cases.

Let us next consider the difference between the average and modern planing mill. As shown in the sketch, I and J represent a typical one-story building with machines arranged as in K to house a planer and matcher (No. 19), a feeding table (No. 21), and a trimmer (No. 20). In the original setup there was no feed table and being built before the days of fast feeds, the original planer and matcher fed at about 30 feet per minute and the trimmer just about kept up with it. When the original machine was replaced, the present equipment—a 150 f.p.m. planer and matcher and feed table—was installed. The same trimmer was kept, however, which has to be adjusted for every length of board, so no appreciable increase was made in the overall production of the mill.

Installing a modern selective random length trimmer requires more space than is usually available in the average planing mill and structural changes are often necessary. The best solution to obtain full advantage of reduced costs and increased production possible



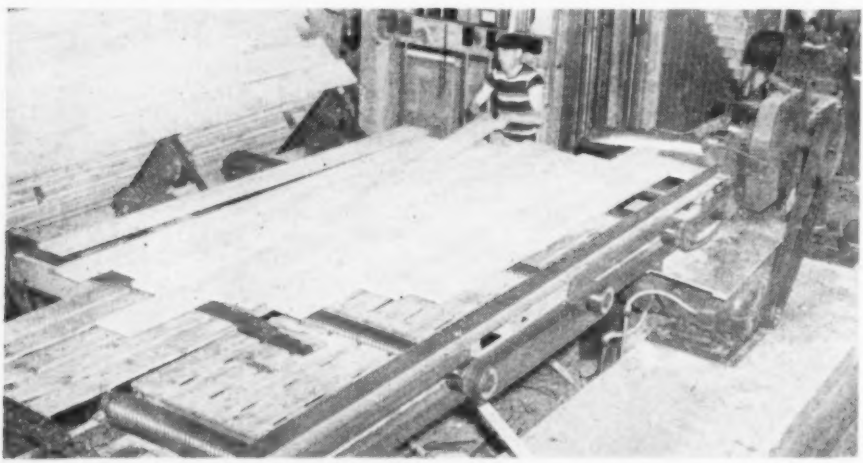
Boards being graded for length, width and thickness at the grading table.



Dressed lumber passes from the planer and matcher over a belt conveyor where it is inspected and graded.

with this machine is a new mill building adequate for its operation.

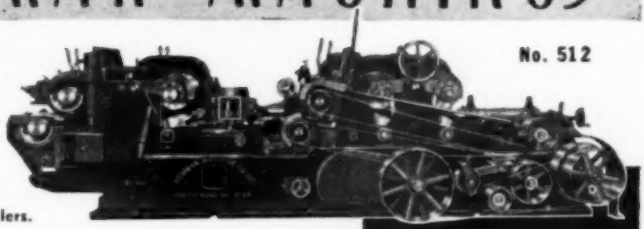
What is probably the most modern planing mill in the country was installed at Rochester, N. H., early in 1951. This mill is actually in three sections and produces some 120,000 feet in two 8-hour shifts per day for a planing mill production much larger than the average mill, particularly in the northeast. The principles involved in its operation can, however, be modified and applied to meet the requirements of a smaller mill with proportionate economy and increase in production.



Far left shows the tilting unloader hoists raising the boards to the conveyor chains from where the boards go to the Stetson-Ross planer and matcher.

NEWMAN MACHINES

Newman



No. 512

Capacity: 16" and 24" wide, 8" thick.
Speeds up to 325 feet per minute.
8" dia. cutting circle.
Six 12" dia. feed rolls.
Single and double profilers.

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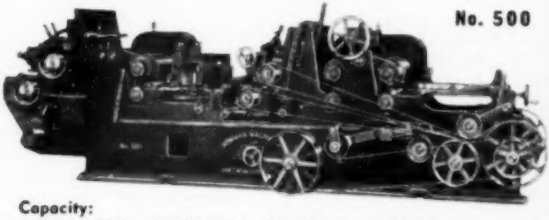

No. 500

Capacity:
14" and 24" wide, 6" thick. Speeds 40 to 200 feet per minute. 7" cutting circle. Six alloy steel feed rolls. High carbon special alloy steel cylinders. Single or double profilers.

The ball bearing NEWMAN 71 (shown below) will grind all sizes of cutter heads. Table is 33" long by 9" wide with horizontal travel of 25" and is heavily ribbed to maintain accuracy over entire travel. Maximum cutter head swing is 11".

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ALL NEWMAN cylinders or heads are DYNETRICALLY BALANCED insuring an accurate and superbly finished product.

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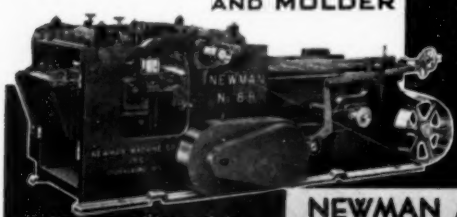
The NEWMAN 55 feeds stock automatically to high speed planers and matchers up to 450 lineal feet per minute. Capacity: 30" wide, 8" thick. All adjustments and controls are centrally and conveniently located.

No. 8-B PLANER, MATCHER AND MOLDER



The NEWMAN 8-B planes 22" wide and 8" thick, joints 4" thick and will match 14" wide. 6" diameter feed rolls. Speeds of 30, 50 and 75 feet per minute.

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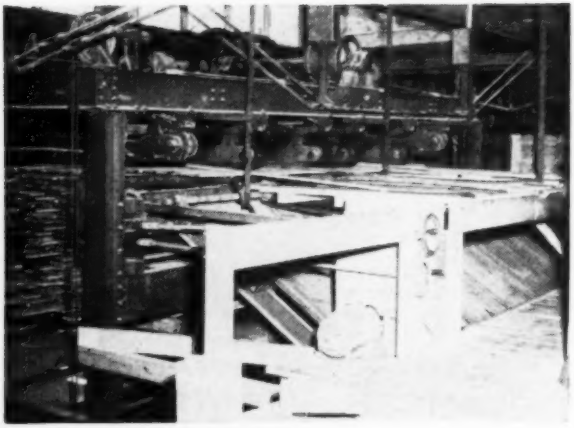
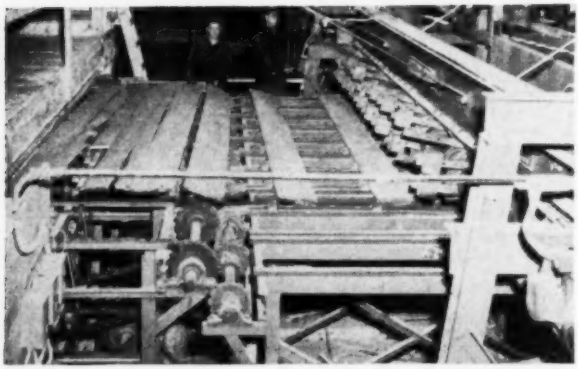
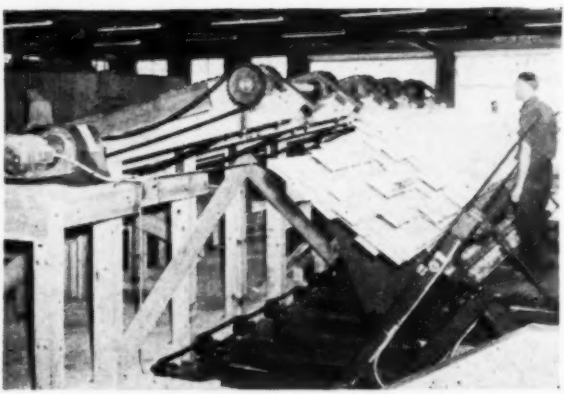
This picture shows traveling chains (referred to in sketch as No. 32) which remove boards from top of load and drop them onto a transfer belt.





The Stetson-Ross automatic random length trimmer trims at the rate of 44 boards per minute. This photo corresponds with Nos. 35, 36 and 39 in Figure 5.

After grading, the lumber enters a tilting reloader which automatically reloads the lumber into 4-foot square packages and discharges them at floor level.



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Maintenance and setup man who grinds all knives and sets and joints them in cartridges, consisting of a yoke with a ball-bearing spindle.

In this planing mill operation a load of air-dried lumber (dotted No. 27) is moved onto an unloader hoist (No. 27) which unloads each layer of lumber onto a transfer chain (No. 28) which delivers it to a kiln car mounted on a lumber stacker hoist (No. 29). A stick layer (No. 30) permits stickers to be placed over each layer and the stacker lowers a course at a time as the unloader hoist raises until the kiln load is completed and is removed to the dry kiln.

After the load is dried, it is run unto an automatic kiln load unstacker hoist (No. 31) which raises the load until the top layer comes into contact with a set of traveling chains (No. 32) which remove the boards, under control of an operator on the platform (No. 35), from the top of the load onto transfer chains (No. 33). The stickers drop onto a transfer belt (No. 34) and the operator removes them to a bunk at the end of the platform. If the lumber to be processed is air-dried, it is fed to the transfer chains (No. 38) over a belt conveyor and bypasses the kiln load unstacker hoist.

Following delivery by the transfer chains, the lumber is next carried through a Stetson-Ross automatic random length trimmer (No. 36) which automatically and smoothly trims the ends with hollow ground saws to even-foot lengths, from 4 to 24 feet, at the rate of 44 boards per minute, all counted by an electric eye. Defects or wane in any board may be cut out by dropping any saw, or saws, independently by the operator at the switchboard (No. 39). All boards are graded for length, width and thickness at the grading table (No. 37) behind the trimmer and are stacked into unitized lumber packages 4 feet square for removal by lift truck or straddle carrier.

The final stage of this planing mill operation is conducted in a large building equipped with roof trusses so that no posts are present to interfere with machining or handling, as shown at L and M, and machine equipment is laid out for straight-line production, as shown at N. The 4-foot lumber stacks are picked up by straddle carrier in the storage areas and placed inside the mill on a floor deck conveyor (No. 40) which accommodates 3 loads. The planer and matcher operator moves each load off the deck conveyor by means of foot-controlled

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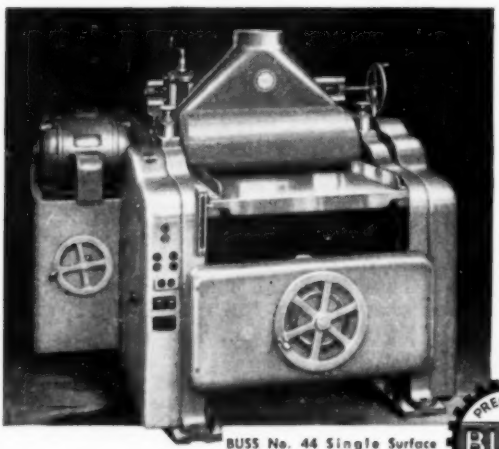

BUSS No. 44 Single Surface Cabinet Planer. Wedge-adjusted bed. Cap.: 26" to 44" x 8"

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push-button switches onto a tilting unloader hoist (No. 41) which tilts and raises the load to feed the boards onto conveyor chains which carry them to the automatic feeding table (No. 42). The automatic feeding table feeds the boards tightly butted into a 10-knife round head Stetson-Ross planer and matcher (No. 43) at a rate of 325 f.p.m.

This high rate of feed requires constant feeding of boards, with no lost time between loads to prevent machine down time. A single operator does this here by automatic handling and as one load is discharged by the tilting unloader, it picks up the next load from the deck conveyor before all of the previous load has been fed to the planer and matcher. To this point one operator (X) controls lumber movement.

A maintenance and setup man operates from the grinding and setup room (No. 47) convenient to the planer and matcher, where he grinds all knives and sets and joints them in cartridges, consisting of a yoke with a ball-bearing spindle. When a run is finished at the planer and matcher, he slips out the profile cartridges and replaces them with new cartridges for the next setup, making a complete setup in a matter of less than 15 minutes.

The top and profile heads and all of the upper feed rolls and outside side head are moved by push-button-controlled motors instead of cranks, and electric brakes are provided on all heads to materially reduce setting up time. Following the setup, the machine operator goes onto his next run and the maintenance and setup man goes back to the grinding and setup room to make ready the next setup.

Dressed lumber passes from the planer and matcher over a belt conveyor (No. 44) where it is inspected and graded prior to entering a tilting reloader (No. 45) which automatically reloads the lumber into 4-foot square packages and discharges them at floor level. The load is carried away from the reloader by live rolls onto a roll case (No. 46) equipped with loading jacks to raise the load for removal by straddle carrier.

Thus, a load of rough lumber enters the mill by straddle carrier, passes through the mill without a single board being handled manually, except for inspection, and is removed by straddle carrier from the mill after processing. Where it formerly required 36 men in the old mill to produce less than 40,000 feet of lumber per day, the new mill produces more than 60,000 feet per 8-hour day with 18 men. The other 18 men operate another 8-hour shift so that the total production per day is about 120,000 feet, or over 500,000 feet per 5-day week.

Space does not permit going into detail on other typical woodworking plant operations but I would like to treat just briefly on a means of improving conditions at the point of greatest loss in furniture plants, namely between the dry kiln and gluing operations. The layout shown in the sketch has proved very effective in many installations.

The kiln load (No. 48) is first placed on a lumber lift to raise it so the top layer is in line with the tables of two cut-off saws (No. 48 and 49). The defects are cut out and the stock cut to length here, and the stock is placed on a conveyor belt (No. 50) for feeding to an automatic jointer (No. 51) which faces the bottom side of the board so that it will lay flat and true. The conveyor (No. 52) then carries it through a single surface planer (No. 53) onto another conveyor belt (No. 54). Four chain-fed rip saws (No.

55) are placed along the belt to rip the stock for defects and to joint for gluing. The jointed stock is then placed on parallel belt conveyors (No. 56) for delivery to two Plycor automatic edge gluers (No. 57) and glued up into panels. This machine equipment arrangement permits the entire cycle of operations, from the rough board to the glued panel ready for further processing, to be accomplished in less than 15 minutes.

I would not advise anyone to jump right into a machine equipment modernization program. Careful study, analysis and planning are required for best results. A plant doing similar work with signal success may be productive of many good ideas. Equipment engineers also visit many plants and know what is going on. Plant supervisory and production personnel often have sound ideas and usually present a practical approach to the problem.

It always pays to start at the beginning. The single trouble spot at which the greatest saving seems possible may not pay off due to adjustments that have to be made in previous operations. The starting point is usually at the dry kiln or just ahead of it into the mill. Make a tentative plan and general layout of contemplated changes with estimated savings and study it carefully. Then buy the machine equipment most needed. With this installed, you are in a much better position to study the next requirement and the new machinery investment previously made will be building up savings that may partially pay for the next machine. By continuing this practice in a sound, careful manner, a modern well-equipped plant will be possible at a very low cost.

This speech was first presented at a Northeast Section meeting of the Forest Products Research Society and is reprinted here with permission.

The End

NOTICE TO EMPLOYEES!

Excuses for laying off on account of sicknesses, deaths in the family, funerals or weddings must be reported to the office before eleven o'clock on the day of the game.

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SECTION

PORTABLE MECHANICAL AIDS

By R. N. Nelson

EXPERIENCED wood finishers know that the quality of the final finish and levelness of the surface are determined by the sanding operations before any of the coating processes are begun.

Years ago, preliminary sanding and subsequent rubbing were done by hand. Under modern production methods, hand sanding and rubbing were found to be far too slow and costly. The inevitable outcome was the development of time saving mechanical equipment. Included in this equipment were portable sanding and rubbing machines which have resulted in gains in both time and quality.

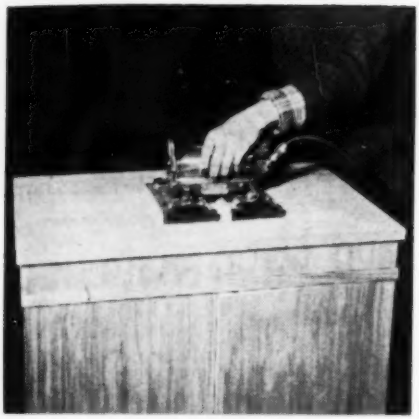
Actual shop experience and tests conducted in collaboration with furniture manufacturers have proved that a wood surface can be sanded and rubbed by mechanical means in from 50% to 70% less time than by ordinary hand sanding and rubbing. It has also been demonstrated that maximum efficiency and maximum life can be obtained from the abrasive paper. Moreover, machine sanding has made it possible for manufacturers to employ women in wood finishing. Light in weight, portable sanding machines reduce fatigue and take over the heavy work. Increased production results.

Portable Sanding and Rubbing Machines

Today there are a number of portable pneumatic and electric sanders on the market, some of which have one pad and others, two. The pad motion on the two pad machines is straight-line, while that on the single pad sanders is either straight-line or orbital. The single pad is used for small areas, the double pad for large flat surfaces.

One of the first sanding and rubbing machines introduced to the trade, over 30 years ago, and still very popular with many of the country's leading furniture manufacturers is a two pad air driven reciprocating or straight-stroke machine weighing 30 pounds. Its long, low stroke is excellent, both for pumice stone rubbing and the final polishing operation. Because of its weight, no hand pressure is required. The machine is merely guided over the surface.

Mr. Nelson is sales manager of the Pneumatic Division of the Sundstrand Machine Tool Co.



Operator is doing white sanding.

Both single and two pad sanders have various size sandpaper and rubbing attachments—all of which are interchangeable and therefore adaptable to practically all types of sanding and rubbing operations.

Portable sanders can be used successfully on five steps typical in wood finishing operations. They are: (1) white sanding, (2) wash coat sanding, (3) padding filler, (4) sealer sanding and (5) rubbing final finish. Since manufacturers have varied ideas and opinions on precise finishing techniques, each geared to do the job best, the chief aim here is not to propose new methods: it is an attempt to show the important part portable sanding and rubbing machines can play in these five basic wood finishing operations.

White Sanding

To produce a level surface and remove press marks and other defects resulting from assembly, the portable sander plays an important part in the cabinet room. Mechanical sanding not only reduces sanding time for the cabinet room but also assures levelness in the wood surface.

After the final belt sanding, and prior to the first coating or finishing operation, the entire surface can be sanded with a portable straight-stroke sander using a hard felt pad or backing, and grit No. 5/0-180A or No. 6/0-220A abrasive paper. A finer grit than is used on the belt sander is preferred on this, the final white sanding.

Where the two pad sander is employed, high speed opposed action pads will also remove additional wood fiber raised by the belt sander, which sands in one direction only.

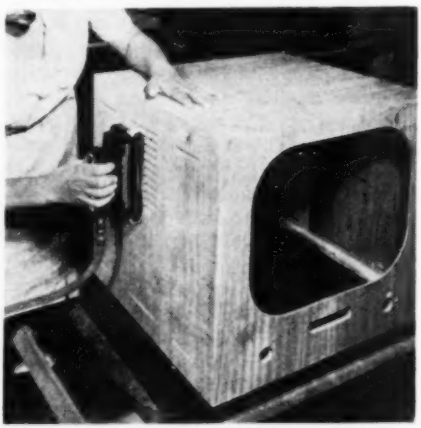
Wash Coat Sanding

As bleaching and staining invariably cause the raising of grain in the wood, a wash coat of thin lacquer or shellac solution usually is sprayed to stiffen the raised grain for sanding. The raised fiber must be thoroughly removed to obtain a satisfactory finish.

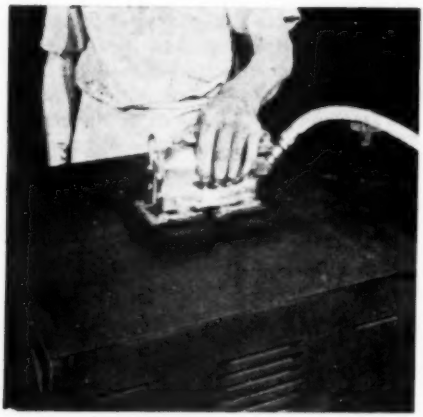
The wash coat is allowed to dry thoroughly and then is machine sanded with a straight-line sander, soft rubber pad and commonly used grit No. 220A or 240A abrasive paper. The soft rubber pad will prevent the cutting through of any high spots or other irregularities due to improper white sanding.

Padding Filler

Since no two kinds of wood are



Operator sands wash coat on a TV cabinet.



Padding the filler.

exactly alike, classification of grain in wood finishing is very important. Open grain wood, as opposed to close grain, requires a wood filler, which greatly improves the appearance of the subsequent finish.

If the wood is not filled properly, unevenness or a pitted effect will show up in the final finish regardless of the amount of finishing material applied.

At one time, wood fillers were applied only by brushing and were padded into the open grain by hand. This method, of course, required considerable time and labor. In recent years, it has been found that filler can be successfully sprayed or dipped and can be machine padded.

There are a number of filler padding machines on the market today that not only speed up this operation but give results far superior to those obtained by the hand method.

The straight-stroke portable sander can be used for this operation. A thin woven wrap-around felt pad is applied to the sander. In machine padding, the sander is used a little sooner than when padding by hand. The reciprocation of the machine pads forces the filler into the open grain and rapidly evaporates the solvent. The machine is operated cross-grain first, then the surface is cleaned up with a series of passes with the grain. The remaining filler is easily wiped off.

Felt pads that become hard and caked with dry filler can be cleaned in naptha, dried and placed back into use.

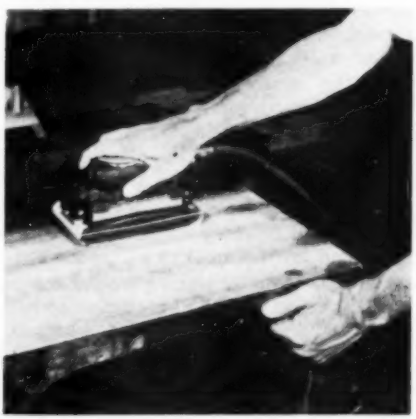
Sealer Sanding

Sealer sanding is an important step in wood finishing because the sealer acts as a base coat for the final finish.

The purpose of the sealer coat is to reduce the open pores, seal the wood filler and permit sanding to a smooth surface. The sealing of wood pores prevents the successive finishing material from being drawn into the wood.

The sealer coat must be sanded thoroughly until all the orange peel and pock have been removed. If this is not done, no amount of rubbing on the final finish coat will produce a clear finish.

For this operation, the straight-stroke sander is ideal. Grit No. 220A abrasive paper is widely used, with a soft rubber pad as backing. The soft pad will prevent the possibility of cutting through any remaining high spots.



Sanding the sealer.

Final finish rubbing.

Both transparent and opaque sealers can be machine sanded successfully.

Rubbing Final Finish

Rubbing is done to cut down the final finish to a smooth surface free from orange peel and other irregularities, and to produce a final effect varying from a dull satin to a high gloss or luster finish.

In these final finishing operations, all of the sanding and rubbing strokes are made parallel with the grain of the wood in order to eliminate unsightly scratches. The final finish actually is a series of scratches running parallel with the grain of the wood. These scratches vary in size from a deep scratch, or dull satin finish, to a very fine scratch not visible to the naked eye and referred to as a "high-luster."

Prior to the manufacture of portable sanding and rubbing machines, all rubbing had to be done by hand. This method, of course, was slow and costly and entirely out of line with today's modern high speed production methods.

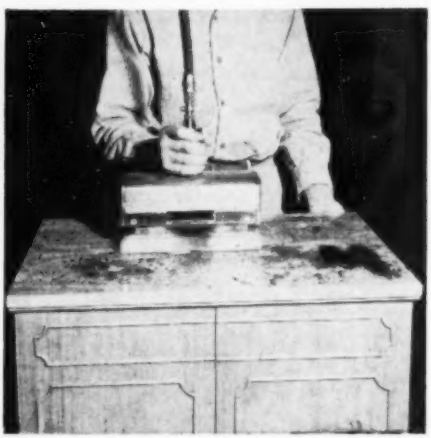
The early craftsmen used pumice stone and a felt pad or burlap for the abrasive. When a satin finish was desired, finer grits of pumice were used until the desired sheen was obtained. When a high luster was desired, the final operation consisted of rubbing rottenstone over the surface, either with a felt pad or with the palm of the hand. The lubricant was rubbing oil or water. The principle of rubbing today is substantially the same. It has been found, however, that lacquer and some varnishes can be successfully cut down with waterproof abrasive paper.

It is important that a good lubricant be used with the portable sander when abrasive paper is employed for the final rubbing. For best results, the lubricant should be as thin as practical.

Water softened with a commercial water softener or detergent is being used by a number of furniture manufacturers, especially in the piano industry. It is not universally acceptable as a lubricant, however, due to the danger of lifting exposed veneer.

Rubbing oil can be thinned with oleum spirits, kerosene or naptha. There are also many good rubbing oils on the market sold under various trade names.

In most cases, lacquer can be rubbed after overnight drying. It has been found, however, that occasionally a



Procedure for a satin finish.

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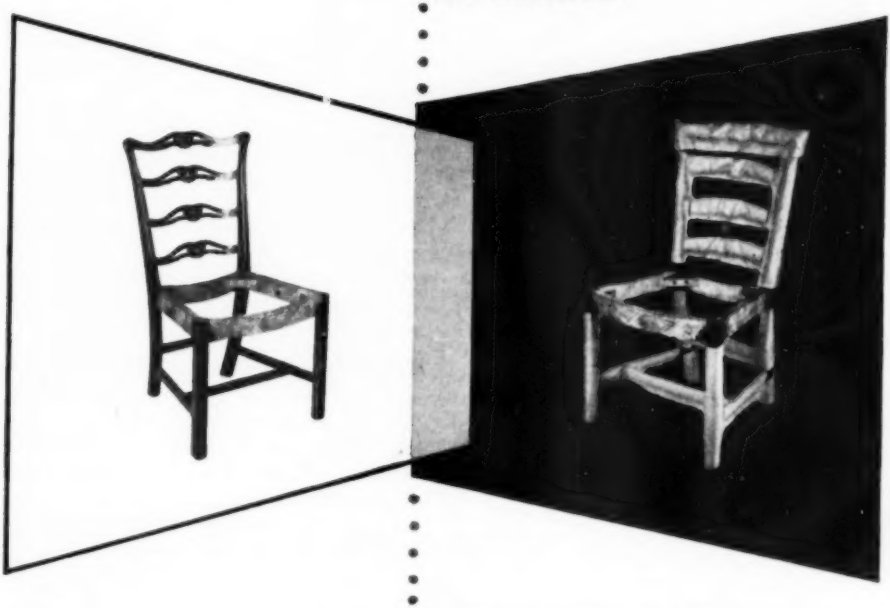

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longer drying time is advisable to eliminate the danger of shrinkage.

The initial cutting down of the orange peel is often done with either grit No. 280A, 320A or 360A waterproof abrasive paper, and the straight-stroke air sander. The pad or backing should be soft felt or rubber. The lubricant can be water with a softener or rubbing oil cut with oleum spirits or equivalent. The surface should be sanded until it has a uniform sheen and no "glassy" spots remain.

A satin finish is then obtained by going over the surface with one of the following: grit No. 500A waterproof abrasive paper, FFFF pumice stone or 0000 steel wool. All of these can be used with the portable sander. Where pumice stone is used on large flat surfaces for the final rubbing, the 30-pound rubbing machine is preferred by many manufacturers.

A high luster finish is obtained by following the abrasive paper either with polishing compound or rottenstone. For this operation, either the large or small sanding and rubbing machine can be used.

When oil has been used as a lubricant, a haze will appear unless the surface has been thoroughly cleaned after the rubbing operation.

The final operation is the cleaning up, by hand, with an emulsion cleaner and polish.

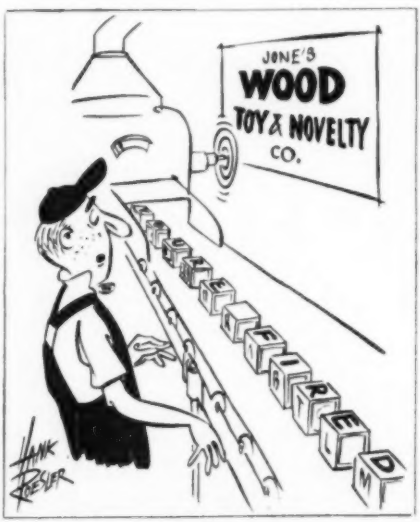
In many plants, rotary buffers are used for final polishing to bring the surface to a high luster. Care must be taken, however, or small rotary scratches will appear.

Both natural and synthetic resin varnish can be successfully machine rubbed. If the varnish is thoroughly dry, the same procedure as for lacquer applies—both for the sanding and polishing operations. The lubricant can be either oil or water.

If it is found that the waterproof abrasive paper streaks the finish, it will be necessary to rub with various grits of pumice stone. For this operation, the heavy 30-pound rubbing machine will give the desired results.

Each of these steps—sanding and rubbing—is equally important, one depending on the other to produce a final finish of lasting beauty and durability. In this day of competitive prices and production, portable sanding machines play a very important part in keeping quality uniform, production steady and costs at a minimum.

More than 90% of the wood finishing industry uses sanding equipment on several finishing operations. However, many still fail to realize that portable mechanical aids for the sanding, rubbing and polishing of wood are not limited, but have a multitude of time- and cost-saving uses.



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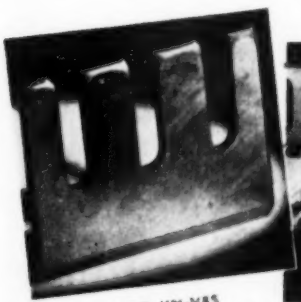

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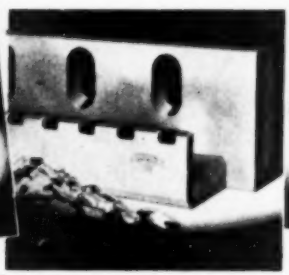

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USE OF TONERS IN *Furniture Finishing*

By J. R. Hollinger

FOR many years most of the furniture manufactured in this country was of period design and was finished with the familiar stain, filler and transparent finish coats. In recent years we have seen a steady and ever increasing tendency toward modern design and a radical departure from the older methods of obtaining color on wood furniture.

In the conventional type of furniture finish the color is achieved by use of dye stains, pigmented wiping stains, fillers, glazes and tinted sealers or top coats. Lack of opacity is the common property of materials of this kind. They are used to emphasize or accentuate the natural figure of the wood without completely hiding it. Naturally, there is an endless variety of colors that can be obtained by these methods but the effects are similar and vary only in degree and not in character. This type of finish possesses great beauty and will probably always retain a degree of popularity.

The modern finish so much in evidence today has departed from the old conception of preserving the basic color of the wood and attempts to produce a pleasing effect by radically changing its color while retaining its character. This is often accomplished by bleaching the wood and then proceeding with the finishing operation in the usual manner. The bleaching process makes possible the production of many striking color effects and is probably desirable from the designer's viewpoint but is only a continuous headache for the production man. The difficulties inherent in the bleaching process are probably partially responsible for the increased use of other methods for obtaining unusual color effects.

Obviously the easiest way to change the color of anything is to hide it with a different color. Substantially this is what is done by the use of toners in modern furniture finishing. The word "toner" has many meanings in the paint business but for the purpose of this discussion we define a toner as a pigmented lacquer of good opacity and suitable for use under transparent furniture lacquers. When toners are applied at full hiding, both the original color and the identity of the wood are completely lost and the piece appears to be merely painted. The pore and grain pattern is then restored by filling with a filler of contrasting color. By thus emphasizing the characteristic pore and grain pattern the wood loses its painted appearance and, except for color, again assumes the appearance one expects of a piece of furniture wood. In addition to the color derived from the filler, glazing or shading is usually used to complete the color effect.

Judging from the examination of a number of toners in use today, there seems to be considerable disagreement

concerning the qualities that are desirable in a product of this kind. Some of these products resemble a highly pigmented sanding surfacer while others are more like a lightly tinted clear lacquer. Neither of these fits our definition of a toner and in our opinion is not suitable for this type of finish. The former will have a tendency to fill the wood to too great an extent and might also promote cracking of the finish while the latter will not have sufficient opacity and will tend to produce more of a stained effect rather than the true toner effect.

The use of toners in furniture finishing can most easily be described by the following typical system for the production of a blond finish on red mahogany:

1. Spray a solid hiding coat of a toner of the proper color. Dry one hour.

2. Apply lacquer wash coat. Dry 30 minutes. Sand.

3. Fill with regular wood filler of the desired color and allow the usual time for filler drying depending upon the type filler used.

4. Apply color-retention type lacquer sealer. Dry 30 minutes.

5. Sand sealer. Shade or glaze if desired.

6. Apply first finish coat of color-retention type lacquer. Dry.

7. Apply second finish coat of color-retention type lacquer. Dry.

8. Rub.

It is apparent that there is nothing unusual about the above system. The toner simply takes the place of the staining operation. In many conveyor finishing plants the toner coat can be applied at a stain booth although some additional time or heat may have to be provided for drying. The primary function of a toner is to change the color of the wood to which it is applied. Since it is a lacquer of good opacity the degree of color change achieved can vary anywhere from the natural color of the wood to the color of the toner, depending upon the thickness of film applied. The hiding power of a toner should be as great as possible consistent with good quality so that the desired color can be reached with the minimum film thickness. A thin film is desirable in order to prevent filling of the pores of the wood. In practice it will be found that it is easier to maintain uniformity if full hiding coats are applied.

A toner should have good color retention in both light and in darkness. One of the most difficult problems facing both the furniture manufacturer and the lacquer chemist is the maintenance of color of light finishes. Toners can be of some help with this problem because it is possible to make pigmented lacquers which have better fastness to light than most light-colored or bleached woods. Of course, careful attention must be given to the selection of sealers and topcoats so that the good color properties of the toner are not nullified by color changes in the finish coats. An example of this is the case of a warm blue-gray finish with white pores which has turned to a sickly green with yellow pores because of yellowing of the sealer and clear lacquer topcoats. Since toners can have good light fastness we have greater freedom in choosing suitable finishing lacquers than is the case with bleached wood. With light-colored or bleached wood it is necessary not only to have a clear lacquer which will not change color but the lacquer must also prevent discoloration of the wood itself. A lacquer which has proved suitable for use over bleached wood will be satisfactory over toner, but there are many lacquers which will give good service over toners which would not possess the necessary protective powers for use over bleached wood.

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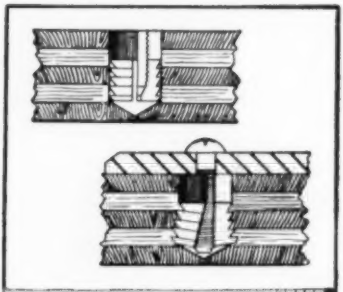

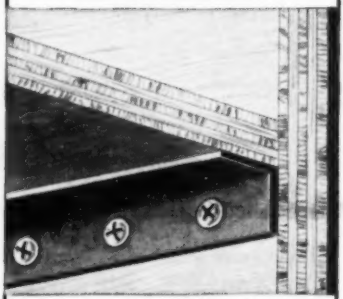

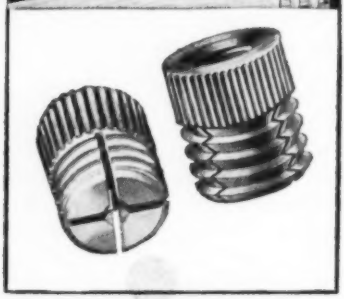

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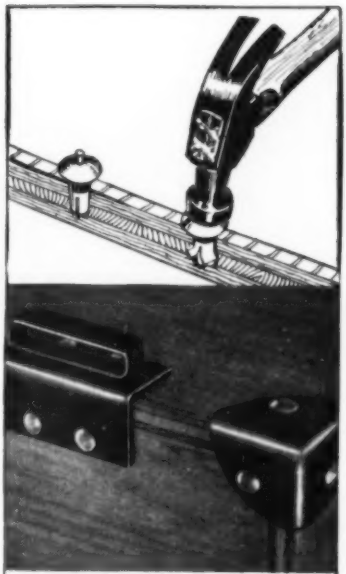

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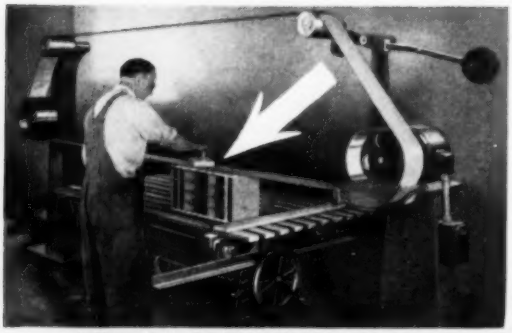

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The method of application of toners is of major importance in the maintenance of uniformity. If the toner is to be applied to give full opacity, the spraying is relatively simple but care should be exercised to avoid too much overlapping at corners and edges since this will tend to fill the pores and leave no place for the filler. Obviously this is even more important if the toner is to be applied at less than full hiding. It should always be remembered that the object is to obtain the desired color with a thin coat and to have this coat conform as closely as possible to the surface of the wood. All the pores must be left open to receive and hold the filler so as to avoid a painted appearance.

There is a difference between applying a coat of toner and applying a finish coat of lacquer. Toners are usually used only on wood with open pores and the toner coat is applied directly to the wood. Lacquer has a tendency to be reluctant to wet the hard portions of the wood and to be absorbed by the softer parts. Thus we have the condition usually described as "crawling." Formulation of the lacquer can minimize this effect but it cannot be completely eliminated. This tendency can be overcome by misting the piece with a dry spray and then following with a coat just wet enough to avoid being dusty. Occasionally wood will vary so greatly in porosity from one spot to another that it will be necessary to first apply a light coat of toner, allow to dry, sand lightly to cut off the fibers which were raised from the porous spots and recoat with a wet coat.

Toners offer many advantages over bleaching. The finishing operation is easier and less costly; lower grades of wood can be used; greater resistance to color change on aging can be achieved; a vastly wider range of color

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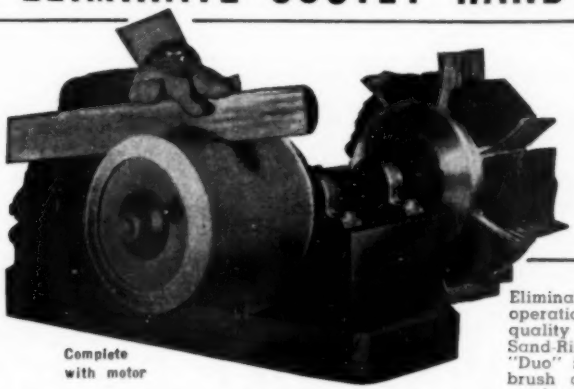

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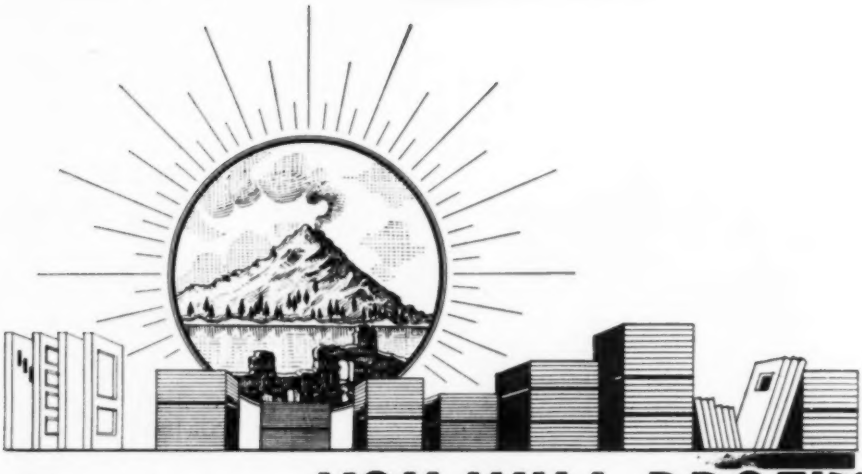

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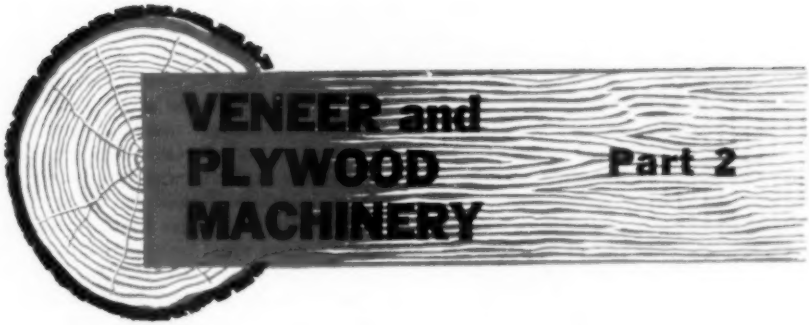

Veneer Lathes and Reeling Equipment

By Thomas D. Perry

ROTARY veneer, cut on lathes, comprises 80% to 90% of all veneer produced. A very small amount is sawed. Most of the balance is sliced or cut half-round on a lathe. Here the flitch is bolted to the stay log bed and swung in a much larger circle than is customary in cutting ordinary rotary veneer. Half-round veneer could just as well be called half-flat, as it has many of the characteristics of sliced veneer.

There are two outstanding advantages in using rotary cut veneer: (1) thin sheets of large area and uniform thickness can be glued together into plywood; and (2) the entire kerf waste of the saw blade is eliminated, leaving only the small central core as net waste. The contrast of useful yield in veneer and lumber is graphically indicated in Fig. 1 and 2, based on standard sawmill procedures, and leaving a 4" or 7" veneer core. This comparison makes no allowance for quality, bark, edgings or defects, which would be substantially the same in either event.

Early Veneer Lathes

The first veneer lathe is believed to have been patented by John Dresser of Stockbridge, Massachusetts, in 1840. It consisted of metal bearings mounted on a wood frame. The motive power was furnished by several hand cranks. This primitive lathe was apparently intended to cut thin sheets of wood, which could be made into berry boxes, baskets and fruit containers. There is little evidence that this pioneer device attained much importance in the industry. The Coe Manufacturing Company of Painesville, Ohio, made its first veneer lathe in 1852, but this was many years before veneer was glued into plywood in any great quantities.

It was not until about 1870 that the prototype of the modern veneer lathe became commercially important. This was at the time that curved plywood was developed for such items as curved sewing machine lids. These required thin cross laid veneers to be glued together around or between curved forms. Shortly thereafter, around 1875, plywood seating appeared on the market. It was curved to body shape, perforated and attached to frames for railroad station and ferry boat seating and lodge settees. The old fashioned perforated chair seat, slightly "dished" for comfort, still survives as the evidence of this era of early plywood. By the mid-1880's plywood was well established in furniture manufacture, but its structural uses did not become important until between 1915—1925.

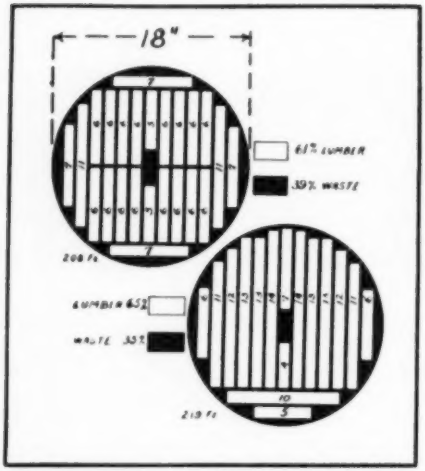

Fig. 1. Yield of an 18" diameter log in lumber—61% to 65%.

Fundamentals of Lathe Cutting

The basic design of the veneer lathe was established early in the 1900's. Its principal features are shown in Fig. 3. Many improvements and modifications have been made in the intervening years, so that the modern lathe of 1953 is a marvel of ingenuity and efficiency. The log rotates toward the knife, which is mounted on a carriage and advanced into the log by a screw feed, a distance just equal to the thickness of the veneer. There is a pressure bar (sometimes a pressure roller) exerting enough pressure on the log, just above the cutting zone, so that the cut will be smooth and not tear the veneer. This pressure bar carriage can be swung clear of the knife and the log, should obstructions prevent smooth cutting. The veneer unreels through a long narrow horizontal throat between the knife and the pressure bar. This emerging veneer is drawn over the conveyor to the clipper, or wound on a reel for later clipping.

The spindles of the lathe move in and out horizontally and carry lathe centers with pointed lugs. These lugs are forced into the ends of the log and cause the log to rotate with the spindle. Spur knives are provided, above the pressure bar, to trim the ragged ends of the veneer and may also be used to cut the veneer to single or multiple lengths. There are trains of gears between the lathe spindle and the screws advancing the knife carriage. These can be shifted to control the thickness of the veneer.

Lathe frames must be sturdy and rigid to carry the heavy cutting load over the entire length of the knife without vibration, which would prevent smooth cutting. In the earlier days before the reeling of green veneer was developed, lathe spindles turned slowly, 30 or 40 r.p.m., in order to permit off bearers to pile the strips of green veneer on the clipper conveyor in orderly packs for clipping in an aggregate thickness of up to 2". Under reeling techniques, spindles turn much faster and require speed regulation according to reeling requirements.

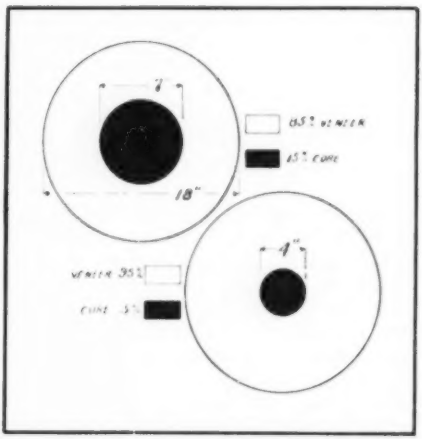

Fig. 2. Yield of an 18" diameter log in veneer—7" core yields 85%; 4" core yields 95%.

Some of the older mills continue the laborious processes of barking by hand and rounding up in the same lathe that does the rotary cutting. Most modern

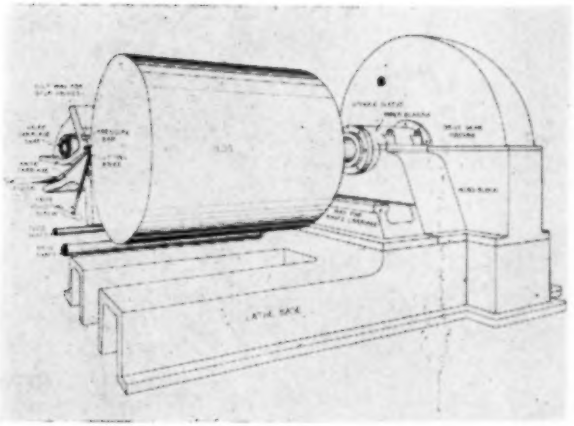

Fig. 3. Basic elements of lathe design.

installations use an extra preliminary lathe, partly stripped, for barking and roundup, as was described in the previous article in the March issue.

Some of the more recent improvements incorporated in the basic design of Fig. 3 and 4 are:

1. The provision of knife holders to reduce the time of tightening the long row of knife bolts. This eliminates the conventional back slots in the knife and increases the useful life of the knife.

2. Quick change decimal adjustments in an enclosed gear box, to supersede the conventional fractional steps for controlling veneer thickness. This is by lever devices without any manual changing of individual gear wheels.

3. Automatic shifting of the cutting angle, or knife pitch, to compensate for the decreasing diameter of the logs.

4. Moving spindles and lugged centers in and out of the ends of the logs by hydraulic pressure, especially for large logs.

5. Easier withdrawal of knife carriage. Also separate withdrawal of pressure bar for inspection of cutting and for removal of splinters and other obstacles to smooth cutting.

6. Methods of controlling the spindle speed, mechanically, electrically, by steam drive or by combinations of any of these.

7. Development of roller, thrust and ball bearings to reduce friction and compensate for wear.

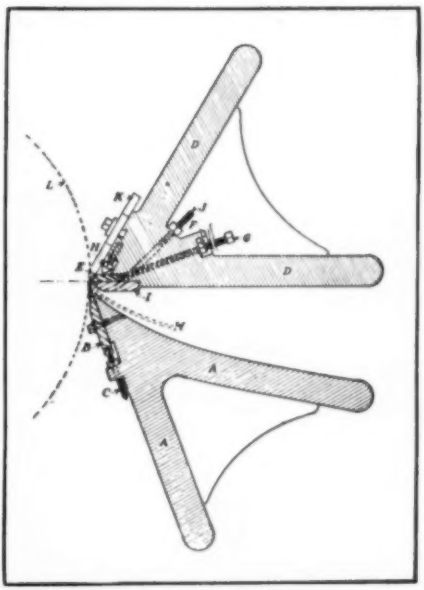

Fig. 4. Detail of cutting mechanism on a veneer lathe.

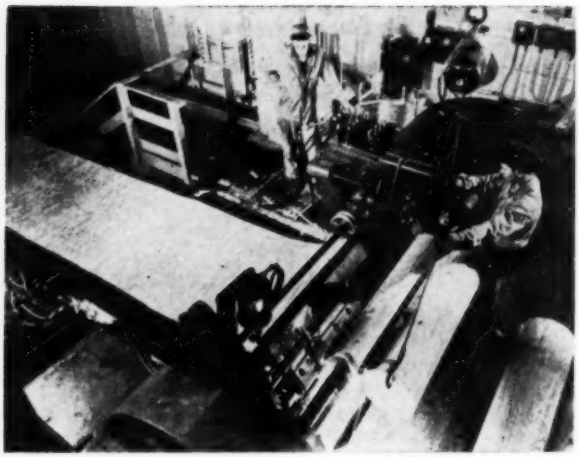

Fig. 5 Modern Coe lathe. Veneer is moving to clipper on a conveyor.

8. Pneumatic operation for pressure bar to maintain uniform pressure against the wood at the point of cutting.

9. Development of roller pressure bar, with positive differential speed drive, according to diameter, especially for large logs.

Stay Log for Half-Round Cutting

A stay log attachment to a veneer lathe consists of a flat faced steel bar, mounted off center on the lathe spindles,

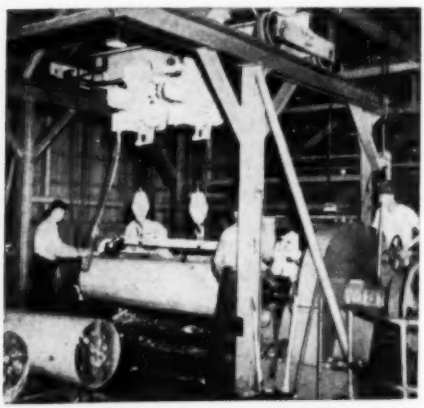

Fig. 6. Mounting a rounded log in a Merritt lathe.

to which sawn flitches can be bolted. The cutting arc, of approximately 30°, has a substantial radius, so that the cutting reveals much of the grain figure of the wood. It is particularly favored for walnut stumps and butts, which have been sawn into flitches. It is termed "back-cut" when the heart is toward the knife and "regular half-round" when the heart is against the stay log. The quality of cutting in half-rounding operations is seldom quite the equal of slicing, due to the straight cut which lacks the shearing action. Slicing is preferable for long flitches, where smooth cutting is the result of the shear effect of the angling downward movement of the flitch across the knife edge. Most lathe manufacturers provide stay logs as an extra item of equipment. They are valuable auxiliary devices for occasional use in any veneer cutting mill.

Secondary Lathe for Cutting Cores

When cutting veneer from logs 7 feet and longer, it is seldom practical to cut below a 6" to 7" core. In species where the heartwood is normally sound, such as birch, this is an unjustifiable waste, as the wood is too valuable to

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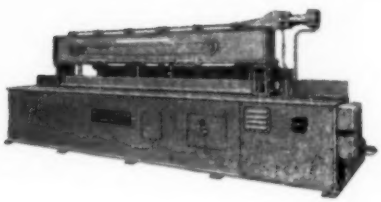

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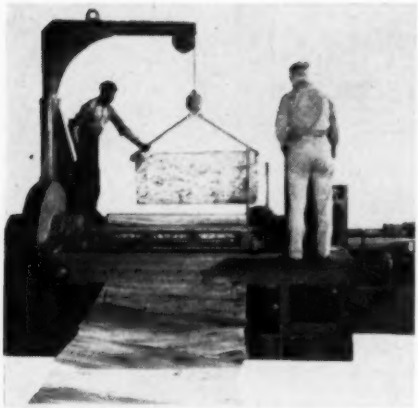

Fig. 7. Jackson lathe for packaging veneer.

convert either into crating lumber or boiler fuel.

The best practice requires that such sound cores be cut in half lengths, remounted in a self centering auxiliary veneer lathe and the cutting continued down to a 3" to 4" core. The resulting veneer is admirably adapted to cross banding, and is customarily used for this purpose by most manufacturers of stock panels and plywood "skins" for flush doors. In most cases the veneer resulting from this recutting is not quite up to face quality, since it may reveal minor cutting checks as it is flattened in the driers.

Lathes for Packaging Veneers

There are many veneer cutting operations where available veneer logs are short, small and not adapted to plywood work, but are ideal for packaging veneer. Lathes for this purpose are usually smaller than the above described, but are similar in design and construction. Such a lathe is illustrated in Fig. 7, equipped with a hydraulic log hoist, built into the frame of the lathe. This lathe also may be supplied with a back knife to cut the veneer to standard widths as indicated. Spur knives, mounted above the pressure bar, are often used to cut the veneer into two or three lengths, of suitable sizes for boxes, crates or baskets. These back knives are clamped in rotating cylinders at the proper spacing, thus entirely eliminating the clipper operation.

Such a packaging veneer operation is relatively simple, as the bolts are usually bought in standard lengths, eliminating the drag saw, and most species can be cut without cooking, since quality cutting is not essential. The smaller lathes can be mounted on trucks and moved into the woods operation, thus greatly reducing the cost of log haulage.

Plants for packaging veneer are well distributed in areas where fruit and vegetables are a major product, since timber requirements are not exacting and almost all local species can be utilized.

Fig. 8. Coe semiautomatic veneer reeling unit.

Reeling Green Veneer

It is only within the last decade that reeling green veneer has received serious attention in the United States and Canada. Up to that time it was customary to drag the veneer out of the lathe and pile it on the conveyor to the

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DOES THE ENTIRE JOB

- handles the glue spreading
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- removes finished work
- stacks it on a truck

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ONE-MAN
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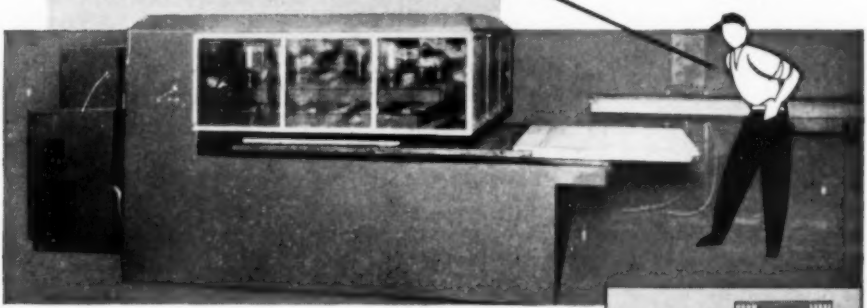

The Plycor One-Man Roto-gluer offers the most practical and economical method of edgegluing for the smaller manufacturer. One man with a Roto-gluer can produce 3000 to 6000 sq. ft. of glued-up stock per day. And look at the different types of work it does:

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There's no wasted time and effort with a Roto-gluer. It's loaded and unloaded simultaneously. The operator hardly steps out of his tracks. Every motion is a productive motion. Result . . . one man produces as much as two and usually three men using ordinary clamp carrier methods . . . flatter, better panels . . . better glue joints . . . more sq. ft. per man-hour . . . at lowest cost.

The Roto-gluer is simple and easy to operate. It's equipped with finger-tip control . . . automatic timing . . . air operated top and side pressure cylinders . . . and high frequency electronic curing (Westinghouse 5 K.W. or 10 K.W. generator). And it's engineered and built for years of trouble-free service.

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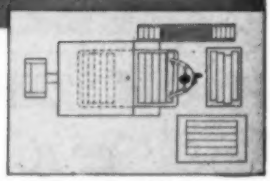
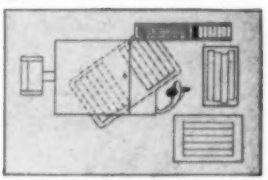
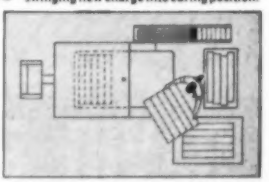


a While one charge is in curing position, operator lays up the next charge.



b When curing cycle is completed, operator shifts valve. PivoTable revolves, swinging new charge into curing position.



c Finished panel is delivered directly in front of operator who stacks it onto truck and then lays up the next charge.

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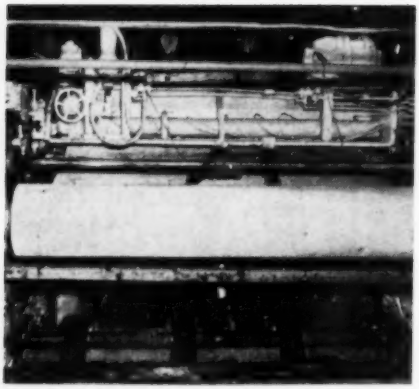

Fig. 9. Direct connected reels for green veneer by Merritt.

clipper, where it was clipped in packs up to 2" thick. It was heavy hard work for off bearers and emphasized size at the expense of quality. Defects had to be clipped out of the inner layers and there was considerable breakage.

It had been the custom in Europe for many years to reel the veneer on spools direct from the lathe and unwind it on the clipper table, where it could be clipped in single layers after individual inspection and thus substantially upgrade the quality. During the era when domestic logs were cheap, there seemed to be little justification in undertaking this extra reeling operation. With the rapid increase in the cost of labor and logs, American veneer cutters began to study European methods and to develop even more efficient techniques for reeling.

The reel itself is a relatively simple item of equipment and there is sufficient "cling" in the wet veneer to prevent unwinding on storage racks. The major problem proved to be that of a differential speed drive between the lathe and the reel, to provide just the right tension in the veneer, as the reel increased in size while the diameter of

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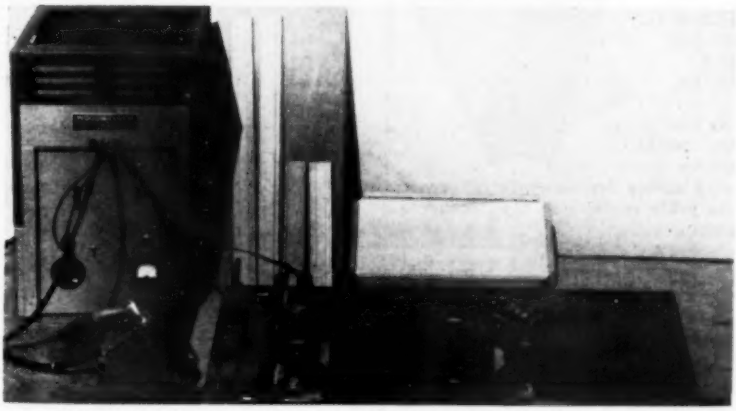

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the log was diminishing. Too much tension tore the veneer and too little produced "wrinkly" winding, both equally disastrous.

One type of reeling unit is shown in Fig. 8. Here the direct connected motor drive can be set at a diminishing speed ratio, depending on the thickness of the veneer and the size of the log. Mounted on a track, this unit can be moved in and out from its operating position at the lathe to a chain hoist station for placing on the storage racks. This is particularly adapted to an operation where some logs produce "reelable" veneer and others require the conventional clipper table procedure. Alternately this reeling unit can be directly connected with the lathe and loaded reels removed by overhead traveling hoists to appropriate runways.

Another illustration of a direct con-

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Fig. 10. Runway for reels loaded with green veneer.

nected green veneer reel is given in Fig. 9, where the workman at the left is straddling one of the runways that removes the loaded reels.

An unusual and efficient plan for reeling veneer was developed by the Allen Quimby Veneer Company, Bingham, Maine, where the lathe spindle was direct connected to a pony steam engine. This provided a wide range of speeds, from a slow start when reeling commenced to 100 to 200 r.p.m. when the reeling was underway on a high quality log. The differential speed connection between the reel and the lathe spindle was a unique development controlled by an electric clutch, which maintained the veneer at just the right tension between lathe delivery and the reel. This type of drive connection appears to be the most satisfactory that has as yet been developed to solve the problem of rotating a reel which is growing in size, by a drive connection to the lathe spindle where the log is constantly diminishing in diameter. The same surface speed and tension must be maintained on both.

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discharge openings from the delivery side of the lathe. The lower and nearer opening led directly to the clipper conveyor at a lower level for the first irregular cuts of veneer that were not holding together. The upper opening led to the empty or partly loaded reel on which the lead end of the veneer was wrapped as soon as the sheet was continuous. A long runway was provided for loaded reels, about 20" diameter, as is shown in Fig. 10. This runway was at approximately the lathe level, and eventually led to the drier where the veneer was dried before being clipped to width. The empty spools, about 6" in diameter, were returned to the lathe station on a similar but lower runway.

Conclusions

Reeling green veneer directly from the lathe is rapidly gaining headway in

domestic veneer mills. It both increases the yield of useful veneer and also substantially reduces the man-hours of labor per 1000 feet of veneer produced. Not all species of wood nor all logs are sound and solid enough to permit reeling and cutting down to small cores, but under favorable conditions, the techniques described here are a definite contribution to progress in the veneer cutting industry.

Since space does not allow detailed descriptions of many phases of design, construction and operation in veneer cutting and reeling devices, interested readers are referred to the following companies for more explicit information. These companies have been helpful in supplying the data and photographs for this article.

Veneer Lathes for Quality Veneer:
Coe Manufacturing Company,
Painesville, Ohio
Merritt-Solem Corporation,
Lockport, New York
Capital Machine Company,
2801 Roosevelt Ave.,
Indianapolis, Ind.

Veneer Lathes for Packaging Veneer:
Jackson Industries, Inc.
P.O. Drawer 591,
Birmingham, Alabama
Coe Manufacturing Company,
Painesville, Ohio
St. Joe Machine Company,
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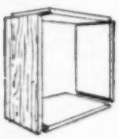

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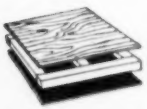

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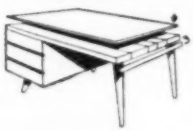

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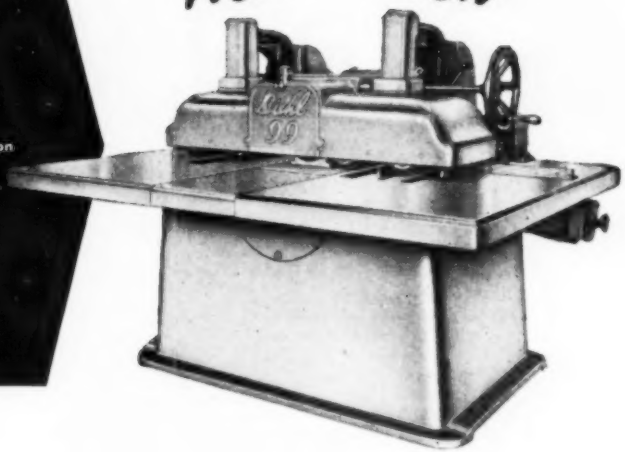

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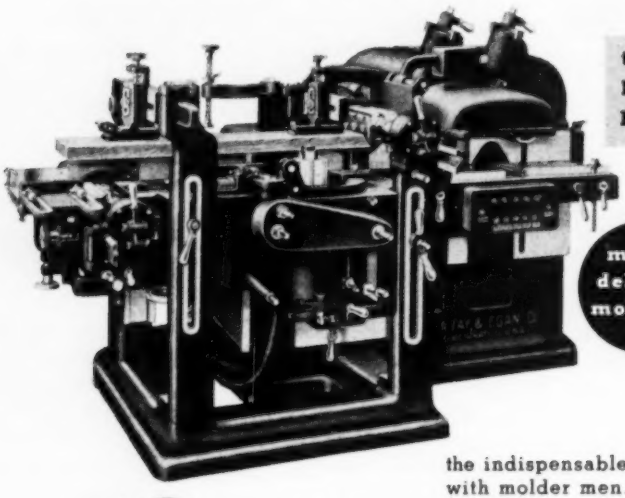

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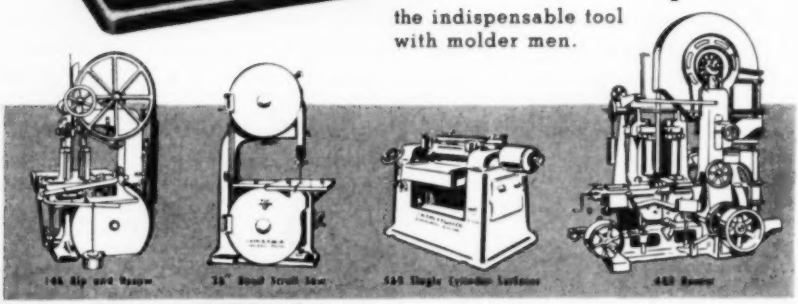

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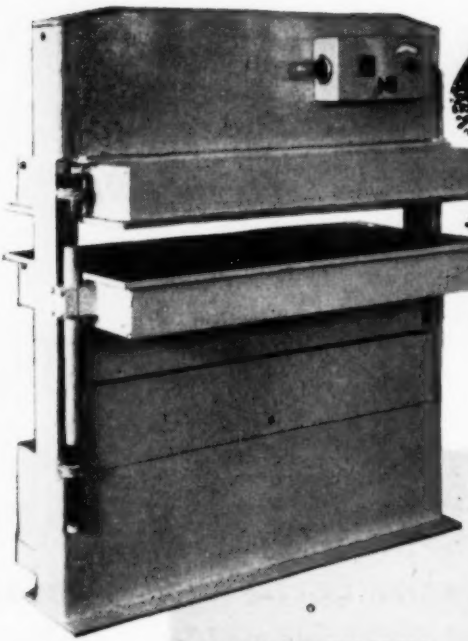

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Quality — VENEER — *Production*

By H. H. Connelly

FINE veneer is not the accidental result of cutting. Many weeks of work must precede the actual slicing of the log into thin sheets of veneer if consistent quality wood is to be manufactured and marketed.

The test tube jugglers have learned to successfully make a silk purse from a pig's ear; but the first veneer expert who can get fine veneer from a poor tree is yet to be found. The cutting of fine veneer, therefore, starts with the selection of the log. The next important step in the process requires skill and know-how—experience not found in text books but the reward of years of living with powder post beetles, spot worms and termites.

The David R. Webb Veneer Company of Edinburg, Indiana, holds an enviable reputation for manufacturing high quality foreign and domestic veneer, of standard thicknesses, for the furniture and building trade. For a number of years this firm has been one of the few veneer plants with the necessary technical experience and equipment needed for manufacturing paper thin veneers for the interiors of hotels and public buildings. The company has also met the demand for a flawless thin veneer for the plastic trade.

To slice prima vera, walnut, mahogany and other fine woods into sheets of veneer 1/85" thick requires precision equipment, correct cooking and exact drying plus prime logs from the top of the grade.

In addition to this, to obtain the desired grain, there must first come the correct flitching operation.

How Flitching Determines Grade

There are two mechanical ways to flitch a log-band saw and circular saw. Either method is satisfactory. The important factor is to correctly open the log to derive the desired figure from the wood grain. Poor flitching can account for a surprisingly big loss in veneer price.

To obtain the fine ribbon stripe desired in mahogany, the Webb Company uses a circular segment saw. To open unusually large logs, two saws are used, one mounted above the other and offset to slightly lead the saw kerf of the bottom saw. This slight offset enables the wood to be entirely removed with one pass of the carriage.

On the return, one half of the log is laid out for later sawing and the second half sawed into several flitches. For example, an oak log goes into the saw for opening through the middle. The second and third trip through the saw will produce the quarter from which

A portable plane operated on a flexible drive shaft is used by the Webb Company to remove all outer bark and grit harmful to the lathe or slicer knife. Quality veneer depends upon proper maintenance of the knife.

comes the much sought comb grained oak.

To cut oak into paper thin veneer, the sheets are sliced slightly thicker—1/75". This is necessary because of the porous nature of oak wood.

To manufacture veneer economically and competitively two factors enter into the pre-cutting problem. The first is economical handling of the log for flitching; and the second is found in the labor saving devices for handling the flitch in the vat.

The Webb Company has solved both problems by locating a log boom to handle both jobs with one operator.

Logs are selected from the pile and placed on skids near the saw carriage by the large crane. To load the carriage, a hoist located over the skids, easily operated by one man, is available. The same hoist is used for turning the log halves on the carriage.

Correct Vatting Is Important

There are several ways to heat a log to soften the lignin for cutting. One method is to place the flitch into water, heat the water to the correct temperature for a given length of time, remove and slice. A second method is to place the flitch on trucks, roll into a closed retort, turn on live steam and keep it there till the correct temperature is reached.

Both methods are widely used. The Webb Company prefers the first method. It is felt that steam cooking brings about a more violent change in the cell structure and produces a quality veneer inferior to the water cooked flitch.

Dropping a cold log into boiling water can cause serious damage, too. To prevent this, the vats are cooled when emptied, then filled before heat is admitted. Steam forced into the water, gradually and evenly, brings the water to the correct temperature.

The time of cooking and temperature vary with the species. For the Webb Company, mahogany seems to cut best at 175° F. The time depends upon the flitch mass. The important consideration is to have the same temperature

Here the lathe operator is tightening the flitch to the stay log attachment with a portable tool. The Webb Company has found a great saving in time and labor with tools of this type.

Veneer 1/85" thick is a special product of selected logs and the best of equipment. Note the latest hydraulically equipped slicer. With hydraulic dogs the flitch is speedily and firmly attached to the slicer and held rigid for accurate slicing.

throughout the flitch; not cold in the middle and boiling on the outside.

To cut a cold flitch (one that has been cooked and allowed to cool) is considered almost as bad as cutting one from the saw.

On days when the mercury falls out the bottom of the thermometer, a careful check is made to see that only one flitch is removed from the vat at a time. The rest are left in the vat till needed. A cold log cuts rough and accurate thickness is difficult to maintain.

How Flitch Is Cut On The Lathe

Many good things have happened to the lathe since John Dremer of Stockbridge, Mass., took out the first patent, Number 1758, on September 3, 1840.

One of these is the stay log attachment for cutting flitch to produce a quarter or comb grained figure.

With the stay log attachment, the Webb Company produces high grade oak veneer of standard thickness, as well as other veneers when the slicers are overloaded.

Here, too, a complement of labor saving devices is used to advantage.

One is a portable plane for cleaning the flitch of all harmful grit and dirt before placing in the lathe. Quality veneer depends upon a sharp knife and one small grain of sand embedded in the flitch can call for a blade change.

A second and third handy tool are a portable drill for boring holes in the flitch for leg screws and a portable drill with a socket attached for setting the screws in the wood.

Two men with these inexpensive drills can pay for the tools in one week with the time saved in contrast to the time needed when doing the job by hand.

Precision Cutting At The Slicer

Next to log selection, quality veneer depends upon the accuracy of slicing. The best of logs will produce poor veneer if the slicer is mechanically imperfect.

The most commonly used slicer is the vertical type, with the knife stationary. There was a short time, however, in the development of the slicer, when the log was stationary and the knife moved. This was soon abandoned, however. Though a few slicers are of the horizontal type, used mostly for low grade work, the vertical machines are far better for high quality face veneer production.

The modern slicer is a precision machine, designed to cut face veneer at a high production level. One of the shackling obstacles to large production of the older type machines was the slow, cumbersome method of dogging the flitch to the table. The dogs had to be run into the wood by hand and on long logs. Even with three working, the dogging

time often ran in excess of the cutting time.

The modern slicer has hydraulically equipped dogs that operate simultaneously at the touch of a lever. If the flitch is bent, two sticks are placed against the ends and the carriage is run into the log. The pressure flattens the flitch against the table like a pancake and holds it there till the hydraulic dogs have firmly sunk their teeth into the flitch.

Slicers are obtainable in almost any length within reason. However, for all practical purposes it is necessary to have one only long enough to handle the longest logs arriving at the mill. The Webb Company feels that a slicer capable of taking care of a 17′ flitch fills the bill adequately. If the machine is less than this, it will be necessary to cut 17′ logs into shorter lengths when they arrive on the yard—this wastes time and requires excessive cutting costs. For the mill cutting its own timber, the problem would be simplified. If the source of supply is a foreign market, however, the buyer accepts the logs as they are shipped regardless of his cutting limitations.

The Webb Company suggests seven points to check on the slicer for peak performance:

1. The knife should be accurately ground and hand honed to remove the wire edge.

2. The slides on which the flitch bed moves up and down should be lubricated regularly and checked for signs of wear. On all modern machines there is a device for compensating for this wear. Only a few minutes are necessary to correct any wear that may develop.

3. The pressure bar needs sharpening occasionally. For cutting oak a stainless steel bar is available which prevents iron oxide (black stain) from forming on the surface.

4. The pressure bar should be checked for accurate setting. This determines how tight or loose the veneer is being cut.

5. A good slicer deserves a good operator. One who knows when the machine is performing in the pink of condition, and who is interested in keeping it that way.

6. The flitch should be swept free from all grit and abrasive material that would be harmful to the knife. The Webb Company uses a power driven hand plane for cutting away that portion of the flitch first contacted by the knife. Remember, with each grinding of an 18′ knife considerable metal is removed.

7. The cuttings from the slicer are stacked face downward as they come from the machine. Thus, when a flitch has been cut, we have each piece in the same position it occupied in the log before slicing. It can be opened and book matched with ease—each sheet forming a perfect pattern with its neighbor. This will extend around the four walls of a room, if necessary, forming a perfect figure throughout.

The Webb Company, with the best of equipment and most careful selection of logs, admits it is impossible to determine in advance whether a flitch will produce 1/85″ veneer. The first dozen slices will be perfect, a hidden defect appears, then bang, out the flitch must go. For in producing paper thin veneer only perfect wood is permitted.

Clipping Requires Experience

The operation of clipping veneer closely parallels that of edging and trimming lumber—it improves the grade. In lumber a number of defects can be removed by sacrificing footage in order to reach a higher market value.

The Webb Company spends a great deal of time teaching a clipper oper-

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ator how to remove defects from a flitch. This is to the advantage of the company as well as the customer.

Defects in flitch veneer must be removed either by cutting the veneer to a shorter length or parallel with the grain. In many instances both are employed on one flitch in order to remove knots, rot, sap or split grain. This means a clipper must be as long as the lathe or slicer.

Likewise, it must be rigidly constructed. The construction of the modern hand feed clippers consists of two heavy end frames mounted on a steel base and held in alignment by a heavy bed-bar. This heavy construction insures the all important alignment of knife with shear bar for accurate clean cutting.

The shear bar consists of a square edged steel bar fastened to the frame by push and pull screws that permit split-hair adjustment. When the bar has been adjusted, it is locked into position and will require little further attention.

You will find, after much use, the shear bar will become slightly rounded, causing a breaking of the bottom face of the veneer.

This can be corrected quickly by removing the bar and sharpening on the knife grinder. This grinding should be on the edge at an angle perpendicular to the face.

The hand feed clippers are powered by individual high torque motors and operated by push button control. The operator makes a cut by depressing a foot switch which starts the high torque back geared motor, which in turn transmits its power through large eccentrics at both ends of the knife bar.

After each stroke a cam type limit switch stops the motor and a spring

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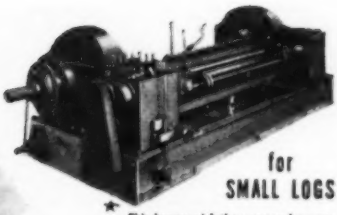

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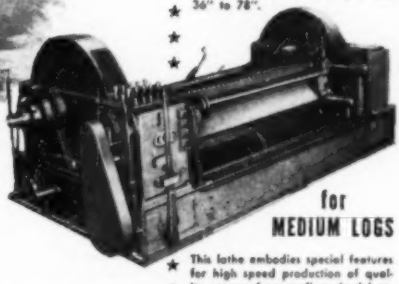

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A typical installation shown at the left in the Reichhold Chemicals, Incorporated laboratories in Charlotte, N. C. plant.
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loaded brake holds the knife at the top position. No wearing clutches are used to transmit the power from the motor to the clipper.

On other types of machines the motor runs constantly, and the knife is engaged by means of cauls rotating around a cone shaped clutch which is moved in and out by a foot pedal. The same braking arrangement is used to stop the blade on the up stroke, after the clutch has been disengaged.

One of the headaches of clipping is the expensive handling of waste from the machine. One man can be kept busy easily if carefully designed waste disposal equipment is not installed.

Mr. Joelson, vice president of the Webb Company, designed and installed a belt conveyor to do all the work. The

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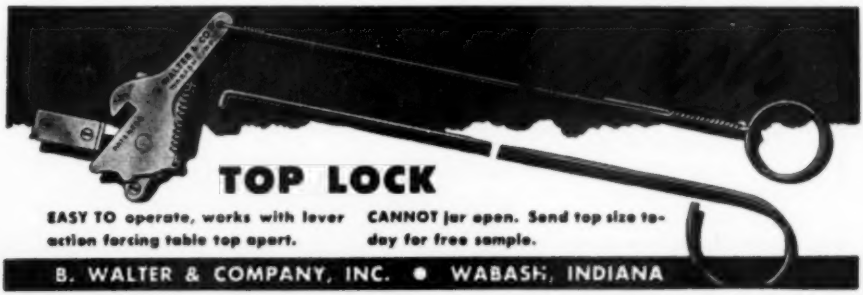

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conveyor runs in a trough below the floor level at the rear of the clipper. As waste veneer drops to the belt from the clipper, it is carried to a hog for shredding, then to the boiler room to make steam for drying the veneer.

Good Drying Means Controlled Drying

The term proper drying of veneer has been kicked around enthusiastically by veneer manufacturers since the first crude method of volume manufacturing was started over 100 years ago.

The struggle has centered around two problems. First, how to dry veneer without wrinkling and splitting; second, how to remove the proper amount of moisture without over-drying or under-drying.

The first has been solved to some extent by improved drying experience; but it is far from the ideal flat sheets that will work with the ease of paper. This is understandable. Wood, unlike paper, still has the growth rings and cellular structure it contained in the tree. If it has the natural characteristics to buckle and twist with the shrinking of the cells by drying, it will continue to do so regardless of the type of drying equipment.

However, this is minimized with better equipment and controlled humidity and heat. Basically, therefore, for ideal drying of veneer the Webb Company found a number of factors that have led to highly satisfactory drying. First, veneer should progress or move in only one direction, so that a lower temperature and higher humidity can be maintained at the start of the drying operation. It is logical to assume that the rapid removal of water from the wood cells brings about a violent change in the structure, resulting in rapid shrinkage, splitting and buckling. As the ve-

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neer gradually moves toward the out end, it moves into a higher surrounding temperature and lower humidity. Such conditioning allows the wood cells to contract at a much lower rate, resulting in flatter and better veneer.

There was a time in the history of veneer manufacturing when it was felt that the best condition was practically bone dry. The known types of glues then in use, no doubt, influenced and shaped this opinion. The larger danger was having an excess of moisture. The hide and vegetable glues contained a high percentage of water to begin with, and even if the veneer was too dry, a heavy dose of water was returned by the glue line.

With the development of the resin glues, the picture has changed. Now it is strongly recommended that the veneer have from 8% to 10% moisture content, and even 12% is not excessive. Now the struggle is to keep the veneers from drying below 6% or 8%. The 6% being tolerated only when the veneer will have a period for stabilizing itself under normal storage conditions before laying.

Second, instruments are more reliable for controlling the internal conditions of the drier than man, resulting in air

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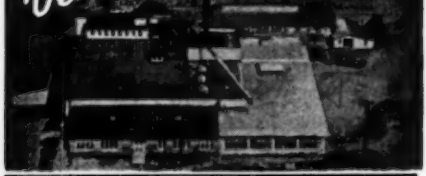

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Shawano, Wisconsin

and electrically operated valves that correct a low or high humidity, a low or high temperature even before becoming noticeable on the exterior.

The third improvement used by the Webb Company to lessen materially the problem of good drying is the moisture meter.

There are old timers who still stubbornly insist they can tell when a piece of veneer is right by feeling and smelling its surface. For the most, however, our smellers are not that sensitive. Besides, there's always the danger we'll develop a severe case of sinus infection that might throw our sniffers off the beam. The sensitive electric meter is an indispensable instrument.

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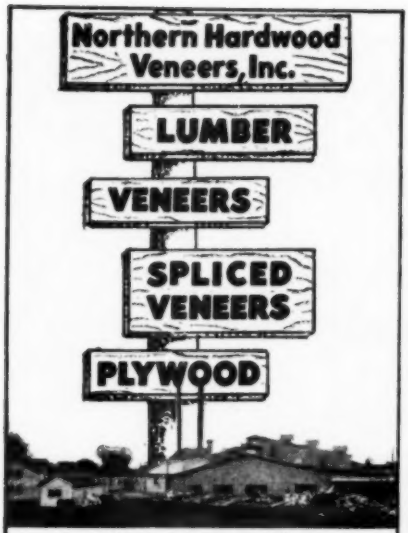

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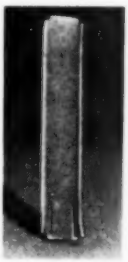
They hardly would voice a good thing around, especially if that secret means added dollars in sales. But in a survey we conducted, they told us:



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WITH A
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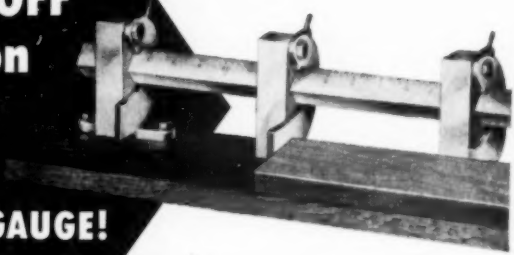

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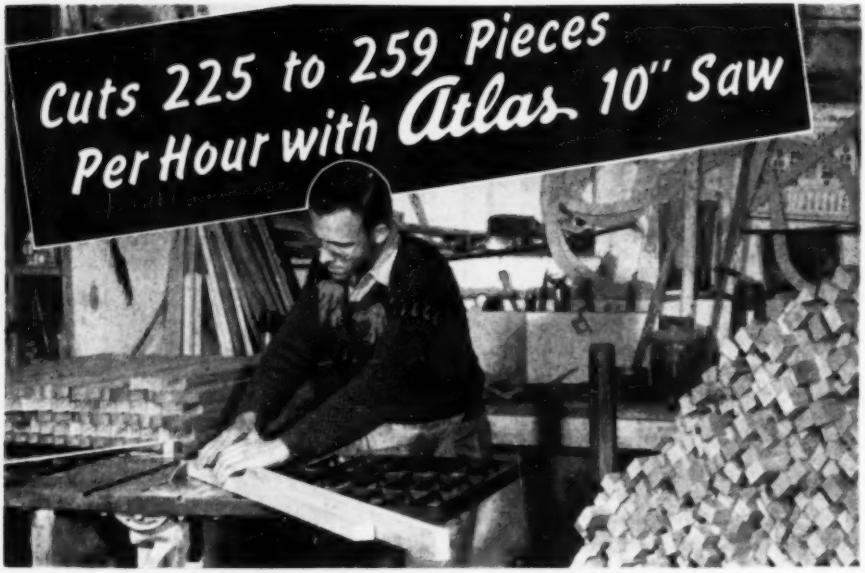

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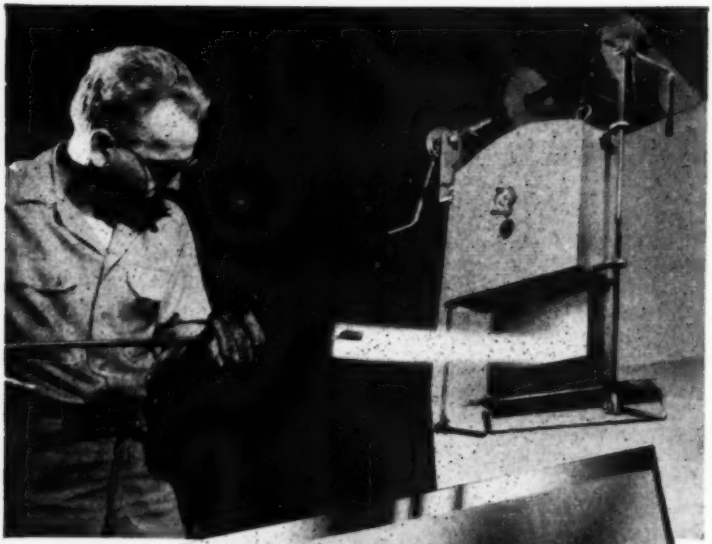

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Know your wood

REDWOOD

BY NED BAILEY

BEFORE the glacial period, we are told, most of the Northern Hemisphere was covered by members of the redwood family. Today these magnificent trees are confined to an area of less than one and one-half million acres along the Pacific Coast. They grow in an irregular strip approximately 35 miles wide and 500 miles long, extending along the west slope from the Cheto River in southwestern Oregon to Salmon Creek Canyon, about 100 miles south of San Francisco in Montgomery County, California.

Redwood grows from sea level to approximately 3000 feet above, on the plateaus and seaward slopes that are often subject to heavy rains and frequent fogs.

It is claimed by scientists that the redwood family constitutes the oldest living plant life on North America, if not the world. The redwood and its very close Sierra relative, the giant Sequoia (Sequoia gigantea), are the largest species in North America.

Although the redwood does not live as long nor grow as large in diameter, it does grow taller than Sequoias. In fact, taller than any other tree in America. Under ideal conditions it will rise up toward the sky as much as 364 feet. These skyscrapers range in diameter from 20 to 30 feet.

Many of the trees of these two species were alive when Jesus Christ was preaching in Galilee. The sizes and ages of two trees verified by the United States Forest Service are as follows: 15 feet in diameter, 270 feet tall, 2173 years old; and 21 feet in diameter, 268 feet tall, 1373 years old. Inasmuch as accurate ring counts cannot be secured without destroying the tree, it is authoritatively assumed that redwoods 275 to 300 feet tall and 20 or more feet in diameter are at least 2000 years old. In commercial operations most redwoods are from 3 to 10 feet in diameter and from 200 to 275 feet tall when they are cut. These trees are presumed to be from 400 to 800 years old.

Everything about these remarkable trees is interesting, their botanical name, for example. One hundred fifty years ago, a Londoner named Lambert published the first known description of the redwood tree. Believing it to be closely related to southern cypress, he named it "Taxodium Sempervirens." Forty years later a German botanist, Endlicher, found that the redwood was a distinct and separate genus so he renamed it. He retained the "Sempervirens" part of the name because it ment "always green" or "ever living." He changed the prefix to the name of an Indian chief he admired very much, a half-breed named Sequoyah, who had, among other accomplishments, formulated an alphabet for his tribe. Anglicized, the name Sequoia has been accepted and maintained ever since.

Straight, and but slightly tapered, the larger trees have heavily buttressed trunks and are clear of branches often more than 100 feet from the ground. They have open, round-topped crowns and short horizontal branches. The leaves often remain on the trees several years, clinging to the branches another year or so after they are dead. Female and male flowers grow on different branches of the same tree. Each year's ovulate flowers mature into dull, purplish brown, egg-shaped cones about an inch long and half an inch broad.

On older trees the bark is a dull red-brown with a grayish cast and is fissured longitudinally. The bark is often a foot or more thick, very dense and tight, and highly resistant to fire. There is a firm, thin layer of cinnamon-red more closely pressed bark beneath the thick outer bark.

The heartwood of redwood is what really provides its name, as it comes in various shades of red, from light cherry-red to a dark mohogany-red. The bark too is red, but the narrow layer of sapwood is almost white. The heartwood is comparatively soft, straight grained and moderately strong. Air dry it weighs about 25 pounds a cubic foot, which makes it several pounds heavier than the wood of the giant Sequoia. It is also somewhat stronger and stiffer. Redwood is ideal to work because it shrinks and swells but little, takes paint well and resists both decay and insects.

Recent estimates place the stand of redwood at about 36 million board feet. Although the consumption is tremendous, practical cutting procedures, intelligent forest management and enormous areas under government control guarantee a continuous supply for future generations. In addition, millions of seeds germinate each year, supplementing the many vigorous sprouts which are produced from stumps, root collar and roots of old and also young trees.

Public responsibility has been stimulated toward the maintenance and protection of these invaluable forests through constant publicity and by allowing the public to visit them. One such forest, visited by many thousands each year, is Muir Woods, a 38,000 acre tract near the base of Mt. Tamalpias.

There is probably no one genus that is more closely woven into the history of this country, or more closely associated with the everyday life of each and every one of us. By this tree, facts have been verified concerning the history of this hemisphere and the many periods of development it has passed through. It has created protective measures within itself against most of the enemies that have caused many other species to die out. For example, none of the ordinary wood rotting fungi grows on redwood timber. In fact, it is singularly free from most fungus diseases. The worst enemy of the forest —fire—does relatively little damage to older trees that have acquired a thick bark. However, young growth is often killed or seriously damaged by this grim reaper. Of more or less recent appearance is a strange malady known as brown-rot, that is taking its toll of standing timber. Brown-rot causes portions of the butt to mysteriously assume the properties of charcoal, crumbling into a fine powder. As yet no way to stop this disease has been found. There has also been another new unclassified, stringy type of fungus discovered that is doing some damage. There are but few insects that cause any material harm. Fortunately the wood is highly resistant to the attack of termites. Persistently repeated fires will make inroads on large trees. The trees are not easily overcome, however,

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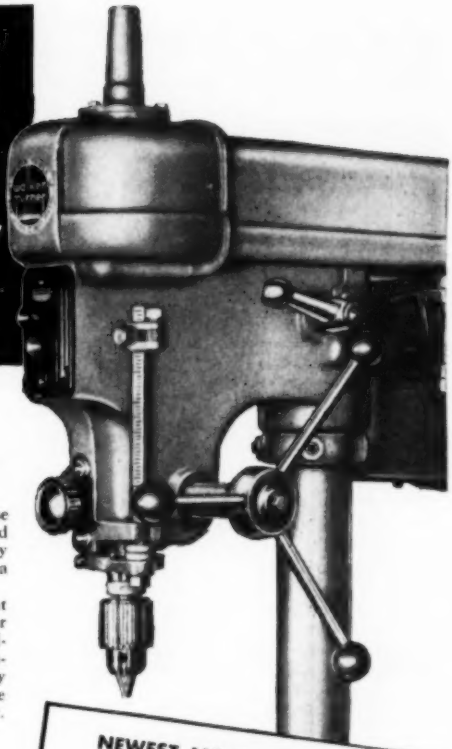

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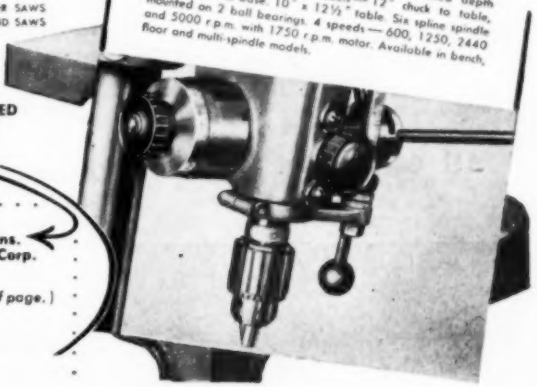

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showing an amazing ability to maintain life by healing over injuries whereever living tissue remains.

The best stands of redwood are found on protected plateaus and beaches, along streams or on moderate west slopes opening toward the sea. The tree requires a moist climate of high humidity as shown by its dependence on Pacific Coast fogs. Thirty to 60 inches of rain falls in the autumn and winter, while heavy sea fogs cover the region in the summer. This same type of climate, we are told, covered the greater part of the Northern Hemisphere millions of years ago, at which time the redwood family was dominant. Despite the fact that this species can stand temperatures from 15° to 110°, it will not grow in a warm dry climate because it needs plenty of moisture.

Now we come to the commercial values of redwood, which are as important as they are numerous and varied. I will mention some briefly, a few of the more interesting in greater detail. A few decades ago the trees were cut for pole-line installations, and were used for fence posts and grape stakes; that was before the era of protective wood-treating. For natural durability, low cost and availability redwood was and still is popular in the west for railroad ties and bridge timbers. It is one of the principal woods used by the heavy cooperage industry and is made into tanks, flumes, silos and bee keepers' supplies.

As the population in this country moved westward several decades ago, and the large stands of western red cedar and redwood were discovered, the national source of shingles moved to the West Coast. Red cedar soon dominated the market, and redwood, partly because the wood was found more valuable for other uses, has never been developed as a really major source

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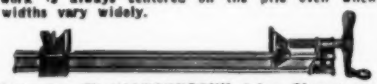

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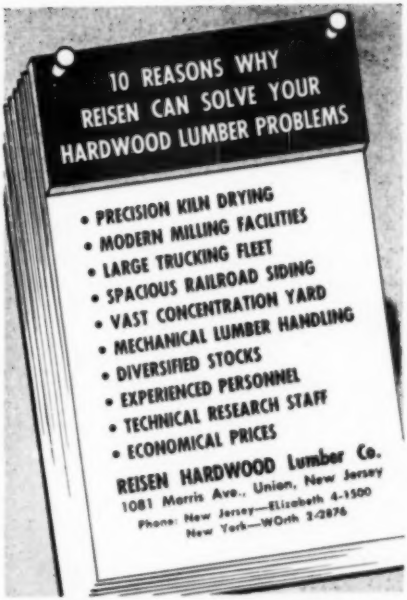

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of shingles. Limited quantities are produced and sold in California and occasionally find their way eastward.

Redwood is used for special grades of wood flour where color is not important. Redwood sawdust is used as a packing medium for grapes and other fruit. It is nearly tasteless and odorless. The wood is gradually becoming quite popular for wood-cased lead pencils. The heartwood of redwood is also a native source of tannin. A few of the other products include siding, doors, veneer, plywood, general millwork, caskets and furniture.

Did you know that, blended with wool in amounts up to 50%, redwood fiber produces a satisfactory material for men's inexpensive suits, mackinaws, overcoats, low priced blankets and other similar items? Yes, the fibrous bark of redwood yields a number of commercially valuable products similar to the one just mentioned. These products are: loose-fill insulation, bark fiber used for mattress filling in combination with cotton and textile fiber for use with wool. Large residual quantities of bark dust, resulting from the shredding of the crude bark, are also used as a soil conditioner to increase the moisture holding capacity of the soil and to permit better aeration.

The reddish brown outer bark contains from 5 to 10% of long and very strong fiber, while the thinner layer of inner bark, which is cinnamon-red, contains from 10 to 18% fiber. Because of its thickness and fibrous nature, the bark is peeled before the log is placed on the sawmill carriage. The coarse fiber is made into so-called "wool" insulation and is used for insulating cold storage, locker and ice plants, as well as home insulation. The fine highly refined fiber, called textile redwood fiber, is reddish brown in color and is only used in material having a dark shade.

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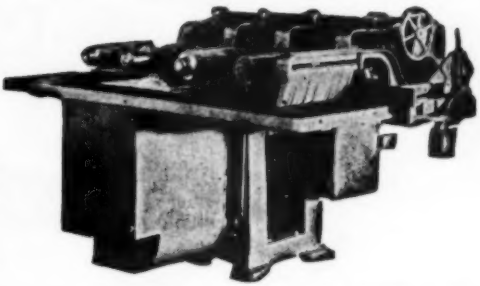
A Real Husky

No. 213 A MODERNIZED HOOSIER SELF FEED RIP SAW



FOR QUICK OPERATION—DEPENDABLE PERFORMANCE

This sturdy unit is designed specifically for high speed ripping of stock longer than 24" and as a gang ripper for stock as short as 12". The No. 213 is equipped with a stationary table top having all feed works brackets bolted to the top—as is the gear reduction drive. The mandrel rides on ball bearings and is raised and lowered quickly by a hydraulic cylinder. Eight driven rolls feed the stock through the saw at high speed. A 50 H.P. motor drives this unit at full capacity. The No. 213 is a real workhorse, built to handle your toughest jobs. Available for direct motor or V belt drive.

SAW DUST DRUM IS OPTIONAL

DESIGNED FOR THE TOUGHEST RIPPING JOBS

SINKER-DAVIS CO.

230-250 SOUTH MISSOURI ST. DEPT. 0

INDIANAPOLIS, INDIANA

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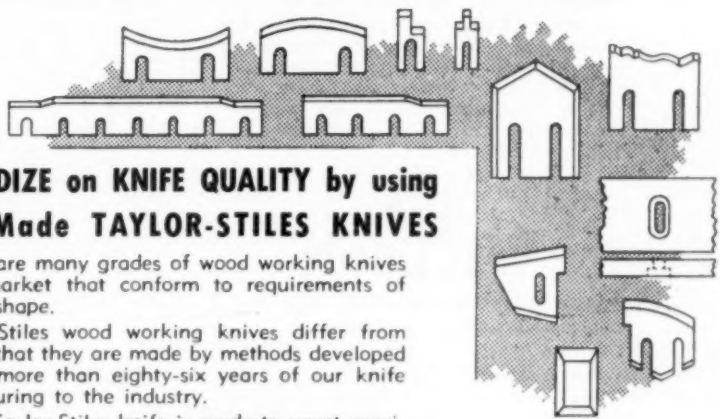

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There are many grades of wood working knives on the market that conform to requirements of size and shape.

Taylor-Stiles wood working knives differ from others in that they are made by methods developed over the more than eighty-six years of our knife manufacturing to the industry.

Every Taylor-Stiles knife is made to exact specifications as to size, shape, metals, temper, and finish.

For further information and prices write to

TAYLOR-STILES & COMPANY

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new Willson

BRONZE

safety spectacles

combining ***eye protection***
with the ***color styling***
workers want today!

NEW NON-FLAMMABLE FRAMES are toughest plastic made for spectacles! Won't chip, crack or craze. New wire core spatula temples give extra comfort. Full range of sizes makes these new styles ideal for use with prescription lenses. See your Willson distributor or write for bulletin.

Style WB—with bronze spatula temples or half-plastic, half-cable temples; Style WBS has matching sideshields.

Also available in flesh-colored plastic frames—WK and WKS.

Choice of 2 Lenses in all styles—heat-treated Super-Tough® glass lenses or Willson Plas-Tough® plastic lenses.

WILLSON®

WILLSON PRODUCTS, INC., 123 Thorn Street, Reading, Pa.

SAW SAFETY

"Portable Power Chain Saws," a recently published National Safety Council data sheet, presents a detailed account of the safe method of handling portable gasoline and electric chain saws.

The data sheet, D-W 12, published by the National Safety Council, 425 N. Michigan Ave., Chicago, Ill., tells how to minimize the dangers involved in handling the portable saws. Special attention is given to each of the following subjects: handling and transportation, operation of the saw, undercutting, felling the tree, use of springboards and poles, bucking, one-man saws, care of saws, grounding equipment, gasoline motors, prevention of fires, and protective clothing.

When two men in business always agree, one of them is unnecessary.

—William Wrigley, Jr.

An Analysis of
CIRCULAR SAW ACCIDENTS

By Frank S. McElroy

Probably the most important part of this paper is the last sentence. Mr. McElroy, chief of the Branch of Industrial Hazards, U.S. Department of Labor, Washington, D.C., strikes at the crux of the matter when he shows that in the case of many accidents safety devices and guards are available BUT are not being used. This material was first presented at the National Safety Congress held last October.

THIS study, in which the Federal Bureau of Labor Statistics is cooperating with the safety-inspection staffs of a number of the state labor departments, originated in a recommendation of the international association of government labor officials. Its purpose is to provide as much factual information about circular saw accidents as possible for use in stimulating interest in accident prevention.

The study was planned to include accidents involving all types of circular saws except portable saws and the large variety of circular saws commonly used in sawmill operations. Collection of the individual case reports was assigned to the state safety inspectors. The analysis and tabulation of the data were made the function of the Bureau of Labor Statistics. To insure a valid and representative analysis, the study was planned to include approximately 1200 cases drawn from not less than 12 states. At the present time (October, 1952), the collection of case records is about half completed. A total of 644 case records has been received from 13 states.

Instructions to the safety inspectors emphasized the following:

Cases to be reported include all accidents involving contact with the saw blade; any part of the frame, table, guards or operating mechanism of a saw; or with any material being fed to, taken from, or thrown by a circular saw.

Only accidents resulting in personal injury are included. However, accidents producing minor injuries are to be re-

ported as well as those producing serious injuries.

Cases are to be reported as encountered in the normal course of plant inspections without regard to the industry or type of operation in which the accident occurred. In other words, the data collection is not to be concentrated in woodworking establishments, but is to be distributed throughout all types of industries wherever circular saws may be used either for direct production or in incidental operations such as plant maintenance or packing operations.

At this stage of the survey the analysis obviously cannot be either complete or conclusive. As a matter of interest, however, a few general facts have been drawn from the 644 case records now on hand. Please remember that these are preliminary and represent only the most obvious elements of the analysis.

The first breakdown of the data indicates what the injured person was doing at the time he was injured.

Activity of Injured

Activity	No. of cases
Feeding	457
Off bearing	60
Cleaning	71
Adjusting	26
Other	19
Not indicated	11

As might be expected, more than two-thirds of the injuries were experienced by workers who were feeding materials into the saws. The volume of injuries experienced in cleaning or adjusting the equipment, however, is highly significant.

The second breakdown indicates the kind of accident and the agency which inflicted the injury.

Here again, the majority of the accidents were of the variety which might be expected—cases in which the injured person moved his hand or some other part of his body into contact with the saw blade. Kickback accidents, however, were fairly numerous, as were the accidents involving flying sawdust and wood chips.

Accident Type and Agency of Injury

	No. of cases
Struck against	
Saw blade	440
Other parts of saw	3
Struck by	
Swinging saw blade	30
Other parts	3
Lumber	74
Falls against blade	13
Caught or pinched by	
Parts of saw	6
Lumber	9
Rubbed, abraded, penetrated by	
Parts of saw	3
Sawdust	14
Wood chips	25
Splinters	7
Other	2
Overexertion	
Handling lumber	4
Other	2
Not indicated	9

The third breakdown shows the kinds of injuries experienced and the parts of the body affected.

The important item in this tabulation is not the predominance of hand and finger injuries, which is about what would be expected, but rather the high proportion of amputations. More than a fifth of all the injuries reported were finger amputations.

The fourth breakdown shows the number of accidents in which some violation of the applicable state safety code was involved.

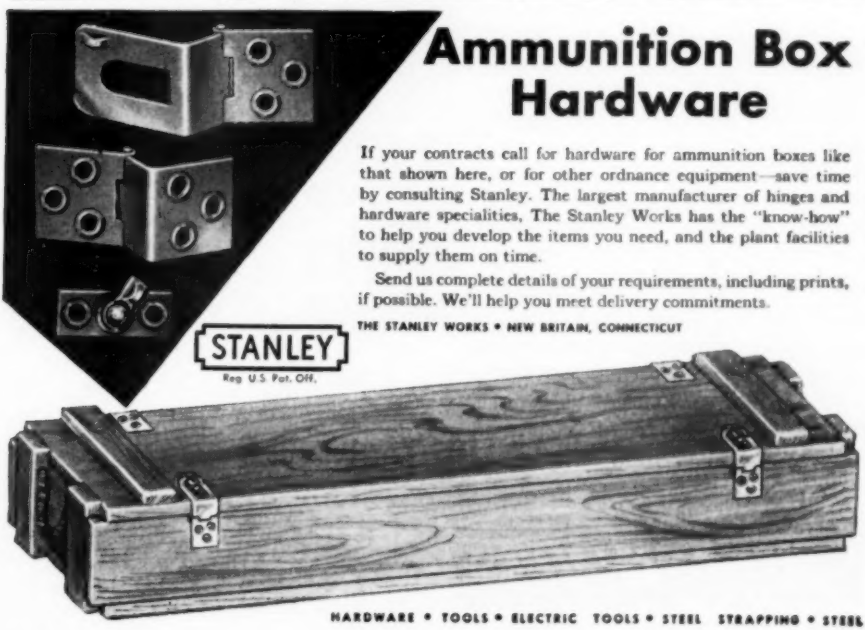
It is noteworthy that the highest proportions of violations occurred in connection with inverted swing saws and hand-feed rip saws. An interesting side light on this tabulation is that in

Nature of injury	Part of Body Affected						
	Totals	Fingers or hand	Arm	Eyes	Other, head	Trunk	Feet, legs
Totals	644	560	15	28	5	30	6
Amputations	149	149	—	—	—	—	—
Bruises	51	23	2	5	—	19	2
Cuts, etc.	383	355	12	5	4	5	2
Foreign bodies in eyes	18	—	—	18	—	—	—
Fractures	29	26	—	—	—	1	2
Strains, sprains	12	6	—	—	1	5	—
Burns	2	1	1	—	—	—	—

Accidents Due to Safety Code Violations

Kind of saw	Total cases	No violation	Violation	Not specified
Hand-feed rip	340	109	226	5
Hand-feed crosscut	133	55	74	4
Self feed	31	22	5	4
Swing cut-off	72	45	24	3
Inverted swing	10	2	8	—
Unspecified	58	14	40	4

a large number of the cases in which violations were indicated, all necessary guards and safety devices were available but were either not in use or were improperly adjusted at the time of the accident.


Ammunition Box Hardware
If your contracts call for hardware for ammunition boxes like that shown here, or for other ordnance equipment—save time by consulting Stanley. The largest manufacturer of hinges and hardware specialities, The Stanley Works has the "know-how" to help you develop the items you need, and the plant facilities to supply them on time.
Send us complete details of your requirements, including prints, if possible. We'll help you meet delivery commitments.
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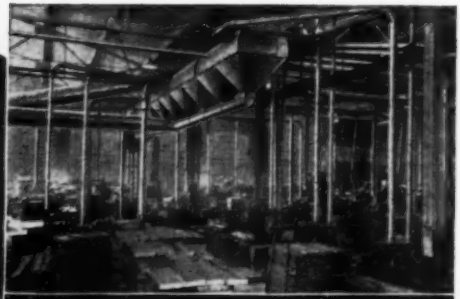
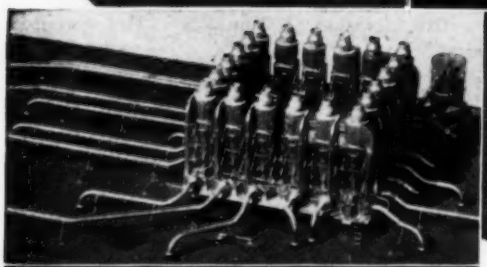
clean air the INVISIBLE tool...

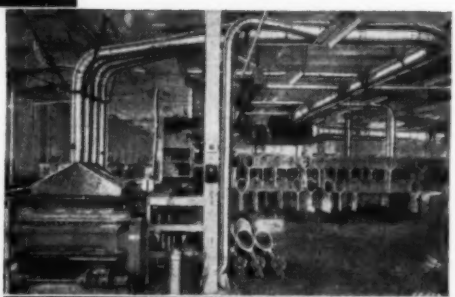


TOY MANUFACTURER: Plenum Main System



PLASTICS MANUFACTURER: Exterior View of Installation

...in leading woodworking plants!



SPORTS EQUIPMENT: Tapered Main System

Wherever you find woodworking equipment, chances are you'll find KIRK & BLUM Dust Collecting Systems. And, whether it's the Plenum Main type of system, exclusive Kirk & Blum development, or the streamlined Tapered Main system, you'll find "clean air . . . the INVISIBLE tool" increasing production and improving working conditions.

An old dust collecting system may be wasting substantial amounts of power, limiting production and handicapping operation in your plant. In more than 45 years of experience, Kirk & Blum Engineers have gained skill that can be used effectively in your plant . . . large or small. Call in a Kirk & Blum Engineer for a no-obligation survey.

Write for the booklet "Blower Systems for Woodworking Plants."

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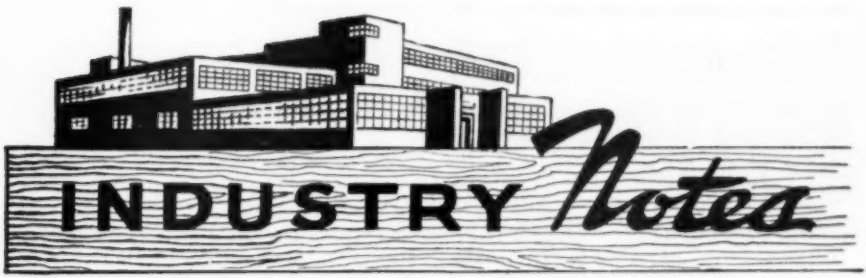


BREUER ACQUIRES NEW PLANT

A. A. Breuer, president of Breuer Electric Mfg. Co., Chicago, Illinois, has announced the company's acquisition of additional plant facilities. The company has purchased a plant of 8000 sq. feet adjoining the present plant at 5100 N. Ravenswood Ave.

The new plant will be used to expand production of the company's line of Tornado industrial vacuum cleaners, portable electric blowers and floor scrubbing machines.

MATERIALS HANDLING EXPOSITION

Thousands of new models of materials handling equipment, valued at more than $10,000,000, will be displayed by exhibiting companies at the Materials Handling Exposition at Convention Hall, Philadelphia, May 18 to 22.

A test-check of some of the 255 companies which will demonstrate their machines revealed that hundreds of new developments will be shown for the first time at the show. It will be the largest capital goods show to be held anywhere in the country during 1953 and will tax the tremendous capacity of all six halls of Philadelphia's huge auditorium.

NEW PLANT FOR HAWKER

The Hawker Manufacturing Co., 1425 Keowee St., Dayton 4, Ohio, is completing a new and entirely modern plant adjacent to present facilities. The new plant, with 6500 square feet of floor area, and completely up-to-date equipment, will house full-scale production of the new Model 1000 Hawker wood turning machine.

CARBOLOY SCHOOL

Through the facilities of its weekly customer training school, the Carboloy Department of General Electric Company in Detroit operates a mobile extension training and educational program on its tungsten carbide cutting tools.

Using its field men and service engineers as instructors, the department conducts an average of 10 classes per month in practically every industrial state of the nation. Some of the sessions run as long as four days and involve lectures, visual training aids and "do-it-yourself" classes. Full information is available from the company.

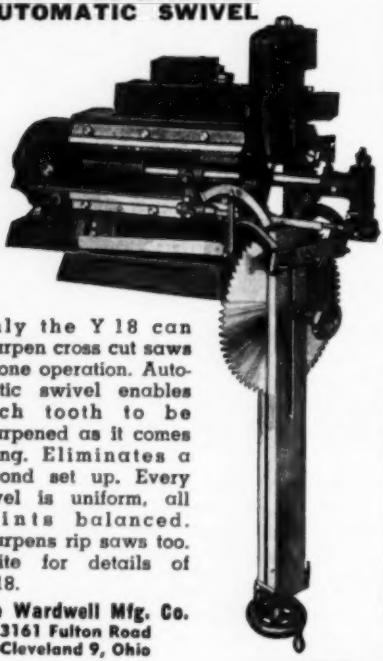
OHIO VALLEY MEETING

The Ohio Valley Section of the Forest Products Research Society has announced a two-day meeting at New Albany, Ind., and Louisville, Ky., for April 23 and 24.

The first day's session will be held at the plant of Chester B. Stem. Topics to be discussed at this meeting include lumber seasoning and utilization. During the afternoon there will be plant tours. The second day's meeting will be held at the University of Louisville. Topics will include electronic gluing and wood finishing.

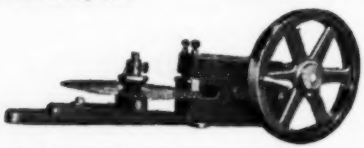
Sharpens, bevels each tooth as it comes along

ONLY Y 18 HAS THE AUTOMATIC SWIVEL



Only the Y 18 can sharpen cross cut saws in one operation. Automatic swivel enables each tooth to be sharpened as it comes along. Eliminates a second set up. Every bevel is uniform, all points balanced. Sharpens rip saws too. Write for details of Y 18.

The Wardwell Mfg. Co.
3161 Fulton Road
Cleveland 9, Ohio



AC 38 CIRCULAR SAW SETTER

Sets teeth at a speed of 150 to 200 per minute on saws with diameters from 5" to 38".

WARDWELL

Maker of largest line of saw and tool sharpening machines

Appointments

The Western Pine Association has elected **U. R. Armstrong** as president of the association. **George L. Barkhurst** and **A. B. Hood** have been named vice-presidents and **C. T. Gray** was re-elected treasurer. **Malcolm Epley, Jr.,** has been appointed assistant in the promotion department of the association.

George F. Goblet, formerly plant manager of the United States Plywood Corporation's veneer mill at Denmark, S. C., is now associated with Clarke Veneers and Plywood, Columbia, S. C.

The Allison Lumber Co., Bellamy, Ala., has named **William T. Haynie** as president and general manager.

Protection Products Manufacturing Co., Kalamazoo, Mich., has announced the appointment of **James S. Bradshaw** as head of their engineering department. **James S. Knauss** has been added to this firm's research staff.

Herbert P. Dales has been appointed sales manager and **Carl L. Adelman,** assistant sales manager of the Coated Products Division of the Carborundum Company.

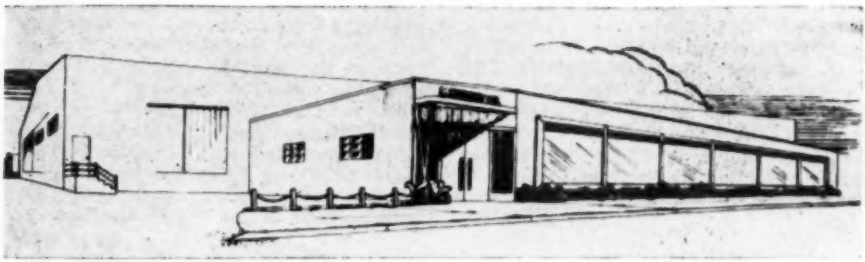
National Starch Products, Inc., has appointed **John C. Clay** as assistant to the executive vice-president.

Charles R. Ransom was elected president of the Southern Hardwood Producers, Inc., at the meeting of the association.

De Walt Inc. has named **Thomas E. Berry** as district manager for New York state.

The Rockwell Manufacturing Company has appointed **E. W. Ristau** as vice-president in charge of sales of the Power Tool Division. The responsibilities of **L. A. Dixon,** Rockwell executive vice-president, have just been expanded to include jurisdiction over the company's Power Tool Operation.

HUSEBY BUILDS NEW WAREHOUSE



Marsh Huseby of the M. F. Huseby Company, announces that a new warehouse is nearing completion. The warehouse, office and display will cover 12,000 square feet, located on an acre at the corner of Garfield and Yates Avenues, in the central manufacturing district of Greater East Los Angeles.

The warehouse area will consist of 8,000 square feet, dock height, with rail facilities to handle three cars at one time. Adequate parking and room for expansion is planned in conjunction with this installation. The office area will be equipped with modern facilities for conducting sales meetings and handling special sales programs of the manufacturers they represent. The leading lines of this organization are Walker-Turner Division of Kearney & Trecker Corporation, Equipto Division of Aurora Equipment Company, Morgan Vise Company, Junior Tool Company and Cincinnati Electrical Tool Company.

RUDOLF BASS

HIGH QUALITY - LOW IN PRICE

SIMONDS

New SI-CLONE SAWS

SCIENTIFICALLY HEAT TREATED • ACCURATELY GROUND
CUTS STRAIGHT • FAST • SMOOTH — STAYS SHARP

This complete new line of circular saws UP TO 12" in diameter, will give long, satisfactory service, excellent performance and the most value for the least cost. For use on all makes of table, bench, swing, radial arm and portable electric hand saw machines.

TYPE OF SAW	SIZE	PRICE
Cut-off	6"	$1.75
Rip	7"	2.00
Combination	8"	2.15
82, 84, 60	10"	3.15
Easy Cut	12"	4.35

TYPE OF SAW	SIZE	PRICE
Hollow	6"	$2.75
Ground	8"	3.95
Planer	10"	7.45
	12"	9.95

ALL SAWS SHIPPED POSTPAID EXCEPT C.O.D. ORDERS. SPECIFY BORE WHEN ORDERING. OR IF PORTABLE ELECTRIC SPECIFY MAKE AND MODEL. SEND FOR LITERATURE.

Each saw is individually packaged, in factory-perfect condition, ready for use.

STOCK UP NOW • ORDER TODAY • WRITE FOR FREE CATALOG

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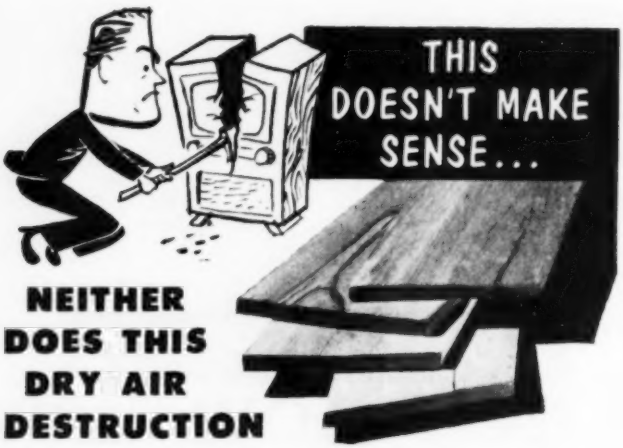
KILN DRYING CONFERENCE

Wood industry plants throughout the northeast will send their executives and dry kiln men to the annual spring conference of the New England Kiln Drying Association being held April 10 at Chicopee, Mass., by invitation of the A. G. Spalding & Bros. Co. at the Spalding plant. Arrangements are under direction of chairman James N. Tynan, Spalding's chief wood technician.

MAINE CONFERENCE

Portland, Maine, will play host to wood products industry representatives attending the spring meeting conference of the Northeast Section, Forest Products Research Society, May 7-8, when 16 prominent authorities will discuss "Efficient Log and Lumber Handling, Processing and Utilization." This is the first time Maine has been visited by this group. The two-day meeting will be held at the Hotel Eastland in



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☐ Have Representative call
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Portland under the cooperative sponsorship of Maine Forest Forum and Maine Chamber of Commerce.

MALARKEY ORGANIZES COUNCIL

First meeting of the Malarkey Marketing Council was held at Ambassador East Hotel, Chicago, in mid-February, with the eyes of the plywood and allied industries focused upon it to see what the outcome would be. M and M Wood Working Company, in forming the council, had stepped beyond the bounds of conventional practice by inviting its customers into counsel for constructive criticism of its advertising, merchandising and attendant operations. President Thomas B. Malarkey declared the two-day session had been "eminently illuminating, satisfying both to ourselves and the distributor members of the council and good basis for future action."

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CUTTER
Catalog

Just off the press. A real encyclopedia of woodworking bits and cutters. 72 pages. Contains engineering advice, photographs, set-up diagrams, useful information on router operation, pricing formula, dimensions, specifications on hundreds of high-speed steel and carbide tipped bits and cutters, available in standard patterns or made to order. Every wood shop superintendent and executive should have this book constantly at hand for ready reference when buying cutters and planning production. Mail coupon for your copy today.

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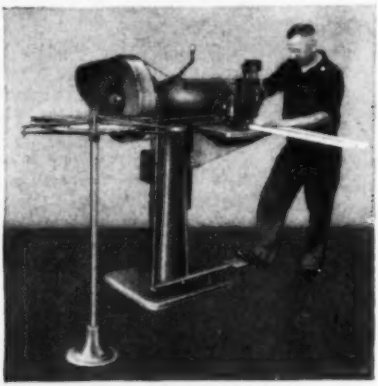
with the SARANAC

CORRUGATED FASTENER DRIVER

You'll get tighter joints with the Saranac Splicer at a fraction of the cost of hand driving. One operator can produce more than four men with hammers and pre-cut fasteners.

Fasteners are cut and driven direct from continuous coils of low cost ribbon stock. Stock costs 28% less than the equivalent amount of pre-cut fasteners. Splicer drives fasteners from 4 to 8 corrugations long — ¼ to ¾ inches wide — plain or saw edges. Fasteners driven flush or embedded in the board.

Seeing is believing! A new oak wood sample — showing the Saranac's surprising power and precision — is yours for the asking.



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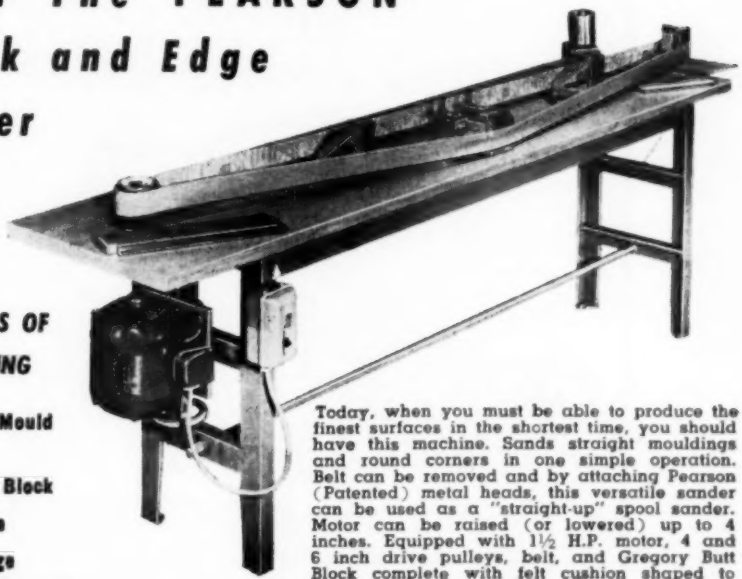
Benton Harbor, Michigan

Manufacturers of the World's Largest Line of Fastening Machinery

Faster, Smoother Sanding With The PEARSON *Block and Edge Sander*



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Stationary Mould Block

Hand Slide Block

Curved Edge

Straight Edge

Spool (All types of curves)

Today, when you must be able to produce the finest surfaces in the shortest time, you should have this machine. Sands straight mouldings and round corners in one simple operation. Belt can be removed and by attaching Pearson (Patented) metal heads, this versatile sander can be used as a "straight-up" spool sander. Motor can be raised (or lowered) up to 4 inches. Equipped with 1½ H.P. motor, 4 and 6 inch drive pulleys, belt, and Gregory Butt Block complete with felt cushion shaped to fit any one mould. Length of belt is 19 feet; table 24 inches wide. Overall length is 11 feet.

We also manufacture Scroll and Drum Sanders

Write for Complete Data

PEARSON SANDING MACHINE CO., INC.
HIGH POINT, N. C.

New Literature

PONDEROSA PINE BOOKLET

A new and larger edition of "The New Outlook" is now off the press. This Ponderosa Pine Woodwork idea booklet has already done a great deal to stimulate original fenestration planning with stock wood window designs. The booklet contains 14 detailed drawings by a famous architect and shows fresh, modern solutions to common window problems. The headquarters of Ponderosa Pine Woodwork are 38 S. Dearborn St., Chicago 3, Ill.

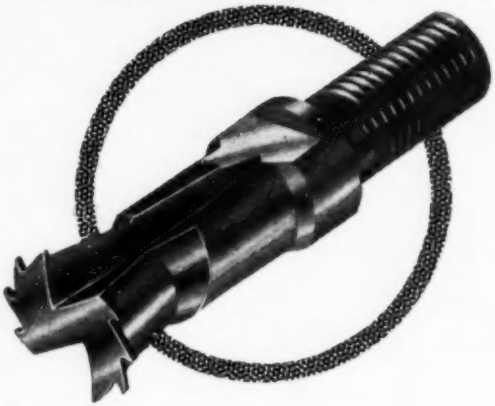
KARBIDE KING CATALOG

A very comprehensive catalog devoted to carbide-tipped circular saw blades and cutting tools plus application information has just been announced by DeLuxe Saw & Tool Com-

Smooth Dovetailing

WITH

WYSONG & MILES BITS



For longer life and greater accuracy insist on Wysong Dovetail Bits. Six popular sizes in carbon and high speed steels available from stock.

WYSONG and MILES Co.

GREENSBORO, NORTH CAROLINA

DOVETAILERS • MORTISERS • SANDERS

pany, manufacturers of Karbide King saw blades and cutting tools.

This full size, 12-page manual, available from DeLuxe Saw & Tool Co., 2476 Blue Island Ave., Chicago 8, Ill., thoroughly explains carbide-tipped saw blades, their advantages and cost-cutting qualities, the tremendously wide variety of materials they will cut including laminates, non-ferrous metals, plastics and highly abrasive materials, together with information covering the full Karbide King line.

SAW PROBLEM SOLVER

Skil Corporation, 5033 Elston Ave., Chicago, Ill., manufacturer of portable electric and pneumatic tools, has published a 24-page manual on cutting applications with a portable power saw. The new "Skil Saw Problem Solver" lists 30 different materials and the most effective method of cutting them with a portable power saw. Information includes proper blade selection, proper cutting technique and helpful hints and suggestions.

Hanna *Fluid Power* Cylinders give you

POWER for production

Hanna Pneumatic and Hydraulic Cylinder power helps cut production costs and increases production in your plant by replacing manual operations with perfectly controlled power. "Cylinder Power in Action" shows you 27 different ways you can put Hanna Cylinders to work for you. Write for free Bulletin 255 TODAY!

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1770 ELSTON AVENUE • CHICAGO 22, ILLINOIS

FF GLUE GUNS

A 6-page catalog on glue guns has been issued by the John P. Fox Company, 5514 York Blvd., Los Angeles 42, Calif. The brochure illustrates all of the guns which this firm manufactures: dowel, dual dowel, dovetail, square, mortise groove, groove and shoulder, cleat and roller. Specifications are given for each gun. An assembly consists of: 1 tank, 10 ft. of air hose, 10 ft. of fluid hose for each outlet, 1 air regulator, 1 air pressure gauge, 1 air valve and fittings to assemble all items. Several pictures show the guns in assembly operations.

BASE FOR WOOD ADHESIVE

The American Polymer Corporation, Peabody, Mass., has released a technical data sheet announcing its Polyco 507. This polymer is an excellent base for wood adhesive. The same precautions and processes using the conven-

NEARLY TWO MILLION NOW IN USE

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LOCALITES

for Machine Tools, Assembly and Inspection Benches

Industry's best tool for fast, accurate, comfortable "Seeing"

$6.12 EACH

in package of 6
Single Units $7.65 Each

MODEL 3267-H-174
Overall length 32¾". Three instantly adjustable joints. Flat oblong base for machine screw mounting.

- **Rugged Construction** withstands vibration and rough handling
- **Instantly Adjustable** with flexible ball and socket joints
- **Reflector** accommodates 100 watt or any A-19 or A-21 medium screw base lamp
- **Baked Enamel Finish** — Exterior, smooth Gray — Reflector Interior, high temperature White
- **Wired Complete** with switch socket and 8-ft. oil-resistant cord and moulded plug

LOCALITE fostoria for Light ON the Job

Reg. U. S. Pat. Off.

Write for complete catalog of Localite models with various type reflectors, arms and bases for every industrial use.

THE FOSTORIA PRESSED STEEL CORPORATION
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Localites are available through wholesalers everywhere

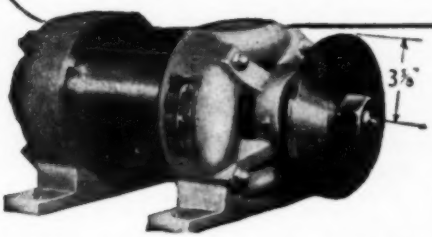
tional polyvinyl acetate wood adhesives are applicable. For wood assembly work or similar applications, the joint can be removed from the clamp within one half hour after the bond is made, we are told. American Polymer brochure P-16 describes in detail the test methods for solvent tolerance, etc.

HOT PLATE PRESSES

The Fjellman & Winther Company, 15 Fourth Ave., Joliet, Ill., has published a new catalog about its hot plate presses. The 8-page catalog illustrates their presses—from laboratory size to single and double openings to 24 openings of sizes from 12" square to 8'x19' with any hydraulic pressure up to 2000 p.s.i.

A 2-page spread shows some of the materials which can be laminated in these presses. The last page of the booklet lists a few of the typical installations where Fjellman hot plate

ONLY 7 5/8" DIAMETER
IRVINGTON
NO. 41 BALL BEARING MOTORIZED
SAW ARBOR



- Cut-off, Rip, Compound Angle Saws
- Trimmer Arbors, Saw Grinders
- Whenever small diameter motor is required

3600 R. P. M.
3, 5, 7½ H. P.
1800 R. P. M.
5, 7½, 10 H. P.
3 Phase, 60 cycle
220 or 440 Volts

- Over-size ball bearings
- Double-end fan ventilation
- Dynamically balanced rotating parts
- Extended end, flush or center mountings
- Right or left hand threads

WRITE FOR ILLUSTRATED FOLDER

Irvington MACHINE WORKS

TWO ADDRESSES: 1808 N.E. 7th Ave., Portland 12, Oregon
3 Colfax N.E., Grand Rapids 5, Michigan

presses have been installed and gives the sizes. This attractive booklet is available from the manufacturer.

MOULDER CATALOG

A new catalog on the electro-unit drive moulders is being offered by Dependable Machine Company of Greensboro, N.C., manufacturer of these machines.

The 12-page catalog gives complete information, specifications and pictures of both the 4", 6" and 8" standard models and the 4", 6" and 8" random length hopper feed models.

A complete description is given of all the main parts and features of the machines. Pictures show the complete machine; also many of the special features are shown in detail.

The finest spur to accomplishment is to have someone say it can't be done.

DETAIL OF TOOTH CONSTRUCTION

New EXCLUSIVE FEATURES

Radialloy-tipped SAWS

CROSSCUT • RIP
COMBINATION
JOINTER • TRIM

for { HARDWOOD • PLYWOOD • COMPOSITION MATERIAL • SOFTWOOD • PLASTICS • NON-FERROUS METAL

Faster! Production minutes count! Labor costs, overhead, power—all add up. Faster production is a "must."

Smoother! While speed is wonderful, it has to be even—no hills and valleys in your output chart. Steady production!

Longer! Endurance too is a PLUS for you—faster, smoother performance for longer intervals between sharpenings.

Economical! Less down time, less tool maintenance, elimination of operations, all money saving methods.

Here is a saw blade of superior quality on which the hardest and most abrasion-resistant carbide tips are used. Extremely tough, durable, Radialloy-tips are permanently brazed to the highest quality heat-treated, precision-ground steel blade, skillfully designed to avoid vibrations. Precision diamond grinding and special superfinish of tip edge help assure sharp, long-life saws. Blades are held at .0015" maximum tolerance, full indicator reading, on sides of tips in their fully mounted position. Outside diameter concentricity is held at .0007" maximum.

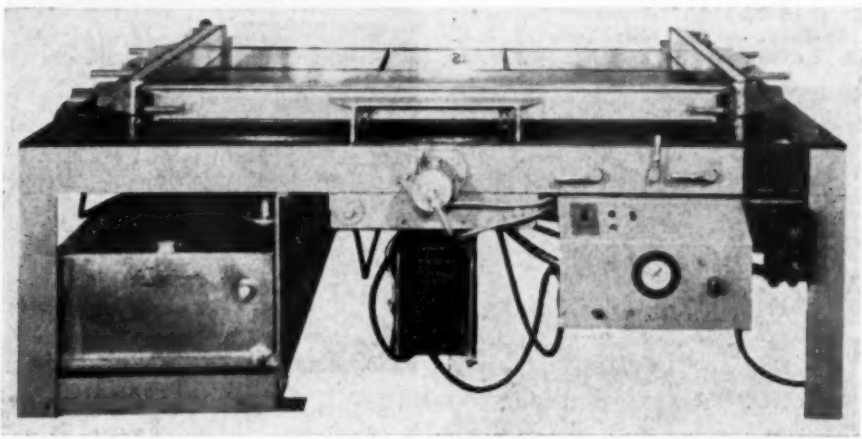
Tell us your problem, we'll supply just the right saws with just the right Radialloy tips, just the right steel for the blade body, to give you maximum stand-up-and-delivery production — at no extra cost!

Write for complete details

RADIAL CUTTER MANUFACTURING CORP.
831 Bond Street, Elizabeth 4, N. J.

EQUIPMENT and Supplies for the WOODWORKING INDUSTRY

VENEER BANDING PRESS

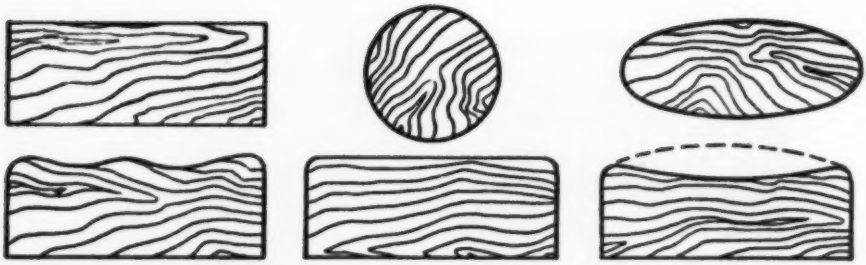


A veneer banding press which will take any shape of panel is being offered by Weldon Flinchbaugh & Company, 777 Greenwood Road, York, Pa. Bands applied with this press will be cured in 20 to 30 seconds by resistance heating.

The pusher shoes on any of the four sides of the machine can be removed with the hand nuts and a pull band substituted. The pull band can be attached to any two electrode clamps and function the same as the straight pusher shoe. Temperature is thermostatically controlled.

Through the use of combinations of bands and pusher shoes a number of small panels can be handled at once. The press, for example, can handle 8 night table tops. We are told that the machine can be changed for any panel size in 10 seconds.

Bands are cut oversize, then glued and trimmed. Panels are then turned 90° and the remaining two sides glued. Panel sizes up to 56" x 108" can be han-



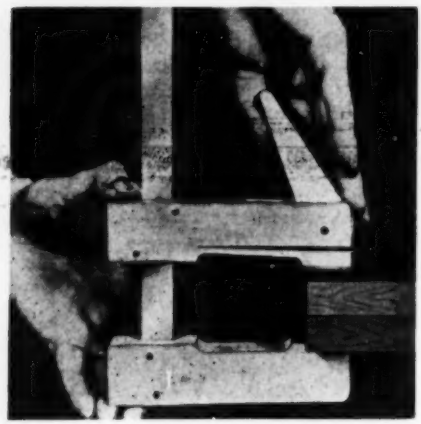
dled. The shoes are usually 3" high, but 4" shoes are also available.

Panels may also be stacked and glued in groups. For example, three 1" panels could be glued at one time if a 3" shoe were used.

The press is hydraulically powered with complete electrical controls including timer.

H v H CAM CLAMPS

This clamp is manufactured by the H v H Tool & Instrument Company, 150 Lafayette St., New York 13, N.Y. It is a woodworker's clamp that holds



without marring the work, we are told. The clamp can be set quickly and adjusts from 0" to 8" clamping length. Cam side mounting attachments are also available.

COAXIAL TERMINAL TRIODE

Machlett Laboratories, Inc., Springdale, Connecticut, announces the ML-6258, a forced-air-cooled ring seal triode incorporating a high efficiency radi-

ator. Designed specifically for r.f. heating application in the 2-3 kw. range, but well adapted to AM, FM and TV transmission, the ML-6258 has plate input and dissipation ratings of 7 kw. and 3 kw., respectively; stress-free thoriated tungsten filament operates at 12.6 volts, 27 amperes.

Maximum ratings apply to 110 megacycles. The tube is also available in an integral anode water jacket, water-cooled model and in a version designed for use with Machlett quick-change automatic seal water jacket.

STAKE AND HANDLE TENONING MACHINE

This machine, manufactured by the B. M. Root Co., York, Pa., is designed for use in plants manufacturing shovel, fork, hoe and broom handles and also stakes and similar articles. There are many uses for the machine, including: the rounding of ends of handles; cutting round tenons on round, square or rectangular pieces; dovetailing off the ends or corners on square or round stock; cutting tenons on stretchers and rounds; turning and boring at the same time any of the previously mentioned articles.

In operation, the spider wheel, convenient to the operator, opens the clamping jaws. The handle is inserted

and positioned relative to the end stop. The spider wheel is then rotated to clamp the material in the clamping jaws. Upon tripping the foot control lever the power feed mechanism moves the clamped handle through a pair of centering guide rolls and into the tenon head to a predetermined depth. The feed then automatically reverses and the tenoned piece returns to its original position for removal from the clamp jaws.

The tenon or chucking head is attached directly to the motorized headstock and is supported by a ball bearing outboard bearing. The operating or moving parts of the machine are all mounted on a substantial steel box column and a bed having an outer leg support. Complete information is available from the manufacturer.

LOG ROLLER CONVEYOR

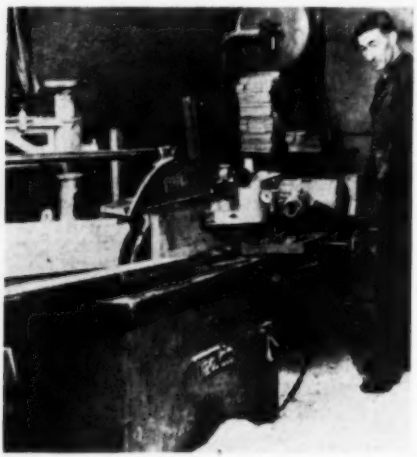
The log roller conveyor unit, manufactured by the Enterprise Company, Columbiana, Ohio, consists of an individually-driven heavy cast steel roll pressed and taper-keyed to a roll shaft mounted on Link-Belt self-aligning roller bearing steel pillow blocks which are bolted and doweled to a welded steel stress-relieved conveyor base fabricated from ¾" plate with machined bearing and mounting pads. The roll is cast with positive gripping teeth which are subsequently "hard-faced" for abrasion resistance and long wearing qualities. Tests show that it is impossible to slip the roll under a log even with locked rotor current using a high torque electric motor.

The roll stands are individually-driven by either 1 or 2 h.p. totally enclosed standard electric motors through newly-designed Link-Belt helical gear speed reducers. The speed reducers and roll shafts are connected through torsionally-resilient coupling, thus helping to reduce overloads that may develop. With the individual drives, the motor control may be "sectionalized" if desired, so as to give a most flexible conveying system and permit continued operations even though a given controller may be down for repair.

ELECTRO TEMPO AUTOMATIC FEED ATTACHMENT

The Critchlow Woodworking Machinery Company of Cleveland, Ohio, is the exclusive agent in the United States for this electro tempo automatic feed attachment which is manufactured in England. This versatile feed unit is powered by a ¾ h.p., 3 phase or single phase motor and has built in reversible switch and permanent lubrication.

It has four feed speeds forward and reverse, of 15-30-60 and 90 feet per minute respectively and this feed control is by gear ratio which does not cut down the power of the motor.



Standard equipment includes two plain tread rubber feed rollers or two serrated steel rollers, whichever is wanted, one steady support and set of tools and grease gun. Also one detachable and adjustable wheel guard. Either the upright support or horizontal support can be furnished.

It is readily adapted to the Band saw for resawing and also to the table saw for resawing. Easily attached to the rip saw for ripping. With upright support one can feed material through the single spindle shaper for edge work on table tops, molding and rabetting of rails, etc. When used with the horizontal support on the shaper, it can be used for making molding, chair rails, etc., with convex or concave bends. It is also a very important feeding attachment for the hand planer or jointer for flat surface planing or for edge jointing.

Some think they have a dynamic personality because they explode often.

RADIALLOY-TIPPED SAWS

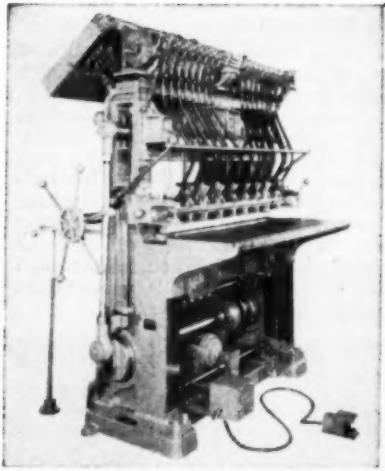
A new carbide tipped saw blade, designed and manufactured by the Radial Cutter Manufacturing Company, 831 Bond St., Elizabeth 4, N.J., is now being offered to the woodworking industry. We are told that the highest quality of heat-treated precision ground steel blade is used, to which are permanently brazed the tough, durable radialloy-tips. The manufacturer points out that some of the advantages include: (1) their own special process which gives a "super finish" to the cutting edge, (2) the body of the blade has been designed to avoid vibrations and is heat treated, (3) a safety lock has been incorporated in order to prevent the tip from flying off.

This firm is able to design special sizes of blades. They regularly handle blades ranging from 8" in diameter to 16" in diameter. The Radial Cutter Manufacturing Corporation also maintains a resharpening and repair service on all makes of carbide tipped saws.

JOB BOOKLETS

The Office of Defense Mobilization, Health Resources Advisory Committee, Washington 25, D.C., has a number of helpful booklets. One of these is "A Job for Women." This booklet discusses the work that women can do; particular health and safety problems; and successful placement of women in industry.

A second one is "The Worker and His Health." This pamphlet fully discusses setting up a plant health program. Such programs pay dividends both to the worker and to his employer.



DOIG NO. 45-20-16

THOUSANDS OF PROBLEMS HAVE BEEN SOLVED BY

DOIG AUTOMATIC NAILERS

Standard Doig Features

1. Anti-friction bearings.
2. Three separate motorized drives.
3. Nail feeder to handle nails from 1 to 3 inches without additional parts required.
4. Nail feeders to give 12 separate nailing combinations.

NEW FEATURES

A. Wheel on left allows operator to adjust back gage from operating position.
B. Solenoid trip permits operator to trip machine at any position desired.

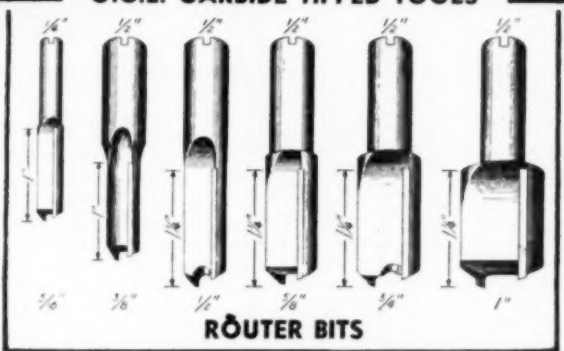
WRITE TODAY. WE INVITE YOUR REQUESTS FOR FULL DETAILS

WILLIAM S. DOIG Inc.

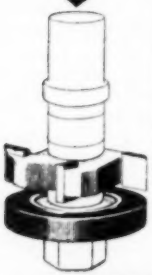
DEPT. 312 — 55 FRANKLIN ST., BROOKLYN 22, N.Y.

O.C.E. CARBIDE TIPPED TOOLS

PLASTIC TRIMMERS



PLASTIC TRIMMERS



Dealers in Principal Cities

For Further Details Write to

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POINT IT *where you want a hole . . . and* **PUSH.**

"YANKEE"

No. 41 Automatic Drill

● For drilling small holes in wood, plastic or plaster. Just point and push . . . an easy one-hand job with this "Yankee" Push Drill. Handle comes back after every stroke, ready for the next push. Eight different size drills inside handle . . . 1/16 to 11/64 inch . . . easily inserted and removed from chuck. Chromium plated, made to give a lifetime of service.

Write for "Yankee" Tool Book.

YANKEE TOOLS NOW A PART OF

STANLEY

THE TOOL BOX OF THE WORLD

NORTH BROS. MFG. CO.

Philadelphia 33, Pa.

NAIL RESEARCH

An outstanding scientist in nail and wood research has written a research bulletin on results of tests with the Auto-Nailer, a high speed automatic nailing machine manufactured by the Auto-Nailer Co., Atlanta, Ga. The tests were conducted in the Wood Research Laboratory of Virginia Polytechnic Institute, Blacksburg, Va. One of the results is Bulletin No. 10, entitled "Strength of Auto-Nailer Assembled Skids." The author, Dr. E. George Stern, is director of the laboratory.

Conducting the tests under exacting conditions and methods, Dr. Stern nailed together scores of skids with ½, ⅝, and ¾-inch thick, planed lumber, some with common nails and others with Auto nails (nails made and driven by the Auto-Nailer). These test skids were 6" square. One of the reasons for this small size was to minimize the effects of deformation within the wood itself, thus making possible more accurate readings of the strength of the joints. All lumber was southern pine and matched in grain, density, specific gravity, moisture content, etc. One of the important findings was that Auto nails did not split the lumber either during assembly nor during the strength tests.

The photograph accompanying this article shows, from left to right: Auto nail after it has been driven against bradding insert; partially formed Auto

FASTER HOLE PRODUCTION

WITH

Commander MULTI-DRILLS

- Drills up to 8 Holes at 1 Stroke
- Fits Any Drill Press
- Adjustable to Any Hole Pattern
- Quickly Pays for Itself Many Times Over

● Commander MULTI-DRILLS are instantly and easily adjusted to handle any hole pattern within a 9" circle. Standard Extension Spindles will increase working area to 22½". Minimum center distances close as ½". Compact in design, ruggedly built, Commander MULTI-DRILLS are making BIG Savings in time and labor for woodworking plants everywhere. Special adaptations available.

Write FOR CATALOG #851 which describes Commander's Production Tools

Your nearby Commander Distributor has the MULTI-DRILL. Write for his name.

Commander MFG. CO.

4222 W. KINZIE STREET • CHICAGO 24, ILLINOIS

HOW ONE MANUFACTURER CONVERTED WOOD WASTE INTO $4,240 YEARLY PROFIT!

American WOOD HOGS

Converting 800 tons of wood scrap into fuel every year has meant an annual "profit dividend" of $4,240.00 for this well-known Grand Rapids furniture manufacturer. Another significant and profit-saving fact about this operation: not one single dollar has been spent to date on repair parts or replacements! Additional benefits of American-reduced chips include: reduced handling costs, elimination of storage problems, fewer fire hazards. Investigate the many American performance features.

write for literature

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1510 Macklind Ave.
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Reduce Costs by assembling your products easier and stronger with "Rockford" Quality Controlled Threaded Fasteners.
We manufacture a complete line.
Cap and Set Screws
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Aircraft Screws & Bolts
* Made in Slotted or "Rockford-Phillips" Heads
"Quality Controlled Products"
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Screw Products Co.
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ROCKFORD, ILLINOIS
Phone: 4-9441 or Teletype: RK 88

nail—the nail is not completely formed until it is driven into the work; Auto nail after it has been driven against clinching insert; Auto Nail after it has been driven into work but not clinched nor bradded.

NEW SHAPER

Heston & Anderson, Fairfield, Iowa, a division of St. Paul Foundry & Mfg. Co., has added a new wood shaper to its line of quality woodworking machinery.

The "752," as it is called by the company, is of modern design and sturdy construction. It features high speed knives together with a large 20" x 20"

table with an adjustable guide fence. It has life sealed ball bearings, weighs 155 lbs. with motor, and stands 36" high. All moving parts are covered for maximum safety.

The illustration shows Leo Keller, chief engineer, and J. D. Angstead, sales manager, discussing features of the new "752" wood shaper.

HYDRAULIC LABORATORY PRESS

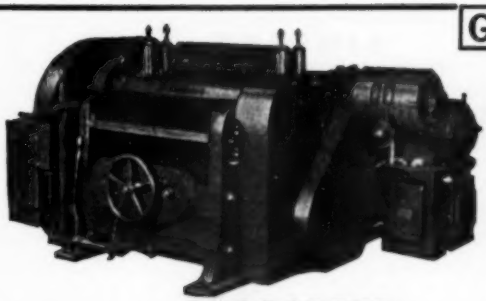
While it is known as a laboratory press, this new Wabash unit has all the ruggedness and dependability of a production machine. It has been found valuable in such operations as laminating, vulcanizing, gluing, dehydrating and compression testing, to name but a few.

The Wabash hydraulic laboratory press, available from the Plycor Company, 565 W. Washington Blvd., Chicago, Ill., embodies unusual precision and accuracy and is sturdily built for dependable service. One of its outstanding features is the distinct paralleling of the platens. This is accomplished by maintaining extreme accuracy in boring the guide holes, we are told.

The electrically heated platens measure 12"x12". The stroke is 6" and the

100 YEARS of Progress

in the development and manufacture of Woodworking Machinery assures you top quality when you purchase Goodspeed Planers.



These Planers are made for accurate and finely finished work; plane any kind of wood on both sides in same operation. Simple in design, powerfully built for years of service with operating expense minimized by use of Anti-friction and Removable Bronze Bearings on Feed Rolls. Come in 24" — 30" — 36" widths.

GOODSPEED
Double Surface Planers

Capacity: Boards of full width and from 1/8" to 7" thick.
Feeds from 20 to 100 feet per minute, two feeds for each machine, according to rates of feed ordered.
6 roll type, 6" diameter feed rolls.
2 sectional infeed rolls
Sectional chip breaker
Furnished with 4 knife and 6 knife round heads mounted on ball bearings.

Send today for free Anniversary Bulletin

GOODSPEED MACHINE COMPANY

WINCHENDON, MASSACHUSETTS

SLASH TOOL COSTS—SPEED PRODUCTION

With VELEPEC Carbide-Tipped Router Bits, Grooving Saws, Shaper Knives, Four Wing Shaper Cutters, etc. for every conceivable shape. Stay sharp 10 to 30 times longer than regular steel tools. They stay sharper, cut cleaner and faster with smoother finishes. Effect tremendous savings in machine "reset" time and sanding operations.

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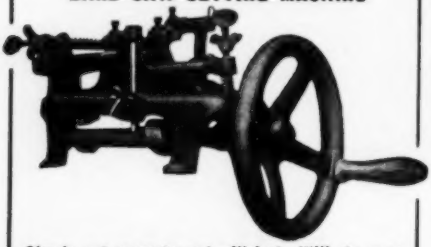
Send Us Your Requirements For Quotation

FRED M. VELEPEC CO.

71-11 64th Street **Brooklyn 27, N.Y.**

SIMPLEX
BAND SAW SETTING MACHINE



Simple yet accurate and efficient. Will do more and better work than any other machine of its kind.
The vise takes saw blades ⅛"—1½" in width and by automatically gripping the saw while tooth is being set, prevents twisting of narrow saw blades. The feed finger is adjustable to teeth with ⅛"—⅜" spacing, point to point.
All adjustments for different widths, teeth, etc. are regulated by but two thumb screws.
Best working speed 100 revolutions (200 teeth) per minute, each revolution setting two teeth. A saw can be set in 4 to 5 minutes.
The machine can be fitted with a flat or V pulley for power operation if desired.

Further Details Upon Request

ZEILLER & NAGEL, INC.
232 JAVA ST. BROOKLYN 22, N. Y.

Hamilton
FACTORY TRUCKS

ESPECIALLY DESIGNED FOR THE WOOD-WORKING INDUSTRY

No. 800

Cap. 1500 lbs.

Heavy Duty Wheels & Casters

Standard sizes 24" x 48" — 30" x 48" — 30" x 60". Special sizes and styles to order—capacities up to 7500 lbs.

Write for descriptive circular and low prices.

THE HAMILTON CASTER & MFG. CO.
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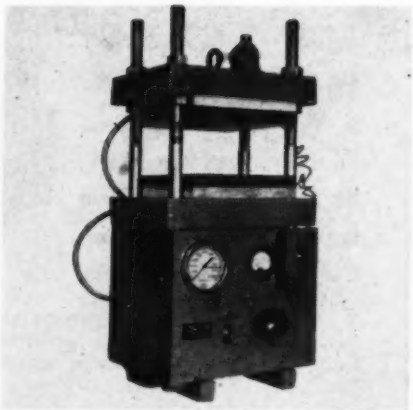


maximum daylight is 10". However, this may be increased by the use of longer columns which can be supplied. Width between columns is 14". Other sizes are also available.

Equipment includes a temperature indicator; selector switch permitting the reading of temperature of either platen individually; pilot light to indicate functioning of thermostat.

The entire unit is well engineered, designed and built for efficient, economical operation. It is compact, requiring only 14"x17" floor space, and is only 36" high. It is available in 12, 20 and 30 ton capacities.

SMALL AIR SANDER

A new smaller, lighter, reciprocating air-powered Model J-R Detroit Easy Finisher is announced by the Detroit Surfacing Machine Company, Dept. WD, 1333 E. Eight Mile Rd., Detroit, Mich.

Features of the Model J-R are lightweight—only 4 lbs., smaller palm-size grip for maximum operator comfort, air switch type control, no-surge automatic mist-type water spray for wet sanding, easy to use abrasive holder for attaching several sheets of sandpaper at one loading. The sander is fast cutting, 4500 strokes per minute operation on air pressure of only 50 to 60 lbs.

Resawing . . . 1/10" Strips with the McDONOUGH 44"

VERTICAL BAND RESAW

Anson-Gilkey Co. of Merrill, Wisconsin, needed a high-speed resaw that would cut 1/10" strips, with precision accuracy and minimum kerf wastage. They specified a McDonough 44" Vertical Band Resaw . . . and got exactly what they needed!

For more than sixty years, users the world over have found that for speed, accuracy and versatility, McDonough Band Resaws cannot be equalled. There are reasons:

- Independently adjusted feed rolls
- Exclusive gear type transmission
- Accurately balanced wheels
- Knife-edge sensitive type saw strain
- Electro-filmed feed roll gears and shaft
- And many more proven design features!

For gauge, center, bevel or rip sawing of stock up to 12" wide and to a maximum depth of 25" . . . for greater dependability and top performance—*Specify a McDONOUGH 44" VERTICAL BAND RESAW!*

Write for Complete Information, TODAY!

FREE . . . Your Copy of This New Bulletin! Send For It, TODAY!

McDONOUGH MANUFACTURING CO.
WORLD'S LARGEST PRODUCER OF BAND RESAWS
1303 GALLOWAY EAU CLAIRE, WIS.

NEWTON

CHUCKING CUTTER

— AVAILABLE IN TWO SIZES —

NEWTON CHUCKING CUTTERS are ideal for cutting square shouldered pins on wood parts such as chair stretchers and similar small parts where it is not practical to drill holes for dowel pins. These cutters will produce pins from ¼" to 1" in diameter and up to 2" in length. Pins can be cut at angles as well as straight. There are two sizes to choose from, both of which can be used on all NEWTON BORERS. They can also be used on drill presses and many other types of machines, or mounted directly to a motor shaft, if desired.

STYLE "C" SHOWN

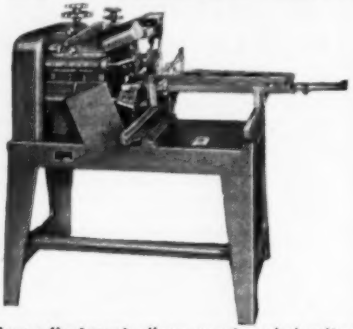
SAMPLES OF PINS & TENONS CUT WITH A NEWTON CHUCKING CUTTER

WRITE FOR DESCRIPTIVE BULLETINS

NEWTON MANUFACTURING CO. TEMPLE, TEXAS

HARRIS

DELUXE FLOOR MODEL TENONER



New adjustment allows exact and simultaneous adjustment of tenon spindles.
3 H.P. Motor.
3 Inch Blades
V Belt pulley drive on both tenon and cope spindles.
Heavier Construction for greater accuracy

MILLBURY MACHINE COMPANY
13 WATERS STREET, MILLBURY, MASS.

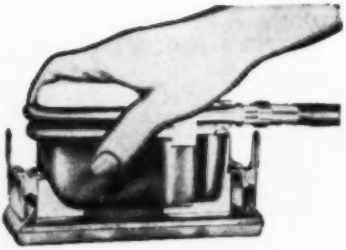
Right Moisture Meter

For Rapidly Testing Wood and Veneer By The Most Reliable Method Yet Devised

Most accurate and versatile meter made.
INSTANTLY INTERCHANGEABLE ELECTRODES, BOTH POINT AND SURFACE TYPES

Wood in all shapes, sizes; smooth, rough; flat, curved; thinnest veneer and heavy timbers — all tested with same meter.
Moisture gradients quickly detected and determined without cutting.
Species correction usually negligible regardless of density.
Available in very wide ranges, from below 3% to above 120% moisture.
Small, light, simple, battery-operated.
Write for catalogue 355 *FP*

KAYDEL MOISTURE GAUGES
Suite 208-210 No. 126 Liberty St.
New York 6, N. Y., U.S.A.



A unique slide action design for attaching the detachable sanding pads allows for up to a 2" off-center adjustment of the pad. Off-center pad position permits sanding in grooves, up to protruding trim and other hard-to-get-at areas. Also provides for instant attaching of desired type of sanding pad to fit the job.

The new sander operates with the same Strate-line reciprocating action that has been a feature of Detroit Easy Finishers for over a decade. It is powered with the sturdy vane type motor used on the larger Model AF.

DE WALT REDESIGNS "POWER SHOP" LINE

DeWalt Inc., Lancaster, Pa., manufacturer of radial arm cutting machines for industry and the home shop, has redesigned its "Power Shop" line of radial arm woodworking machines. The "Power Shop" machines are widely used by small shop owners and residence builders for interior trim and cabinet work.

The most significant changes in the new design are a radial arm which is 3" longer and a work table which is 3" wider and 4" longer. The longer arm and larger working surface permit the machines to rip to the center of a 4' panel. These changes were made to meet the needs of many "Power Shop" users who work extensively with plywood, composition board, and plaster board panels which are purchased in 4' x 8' sheets.

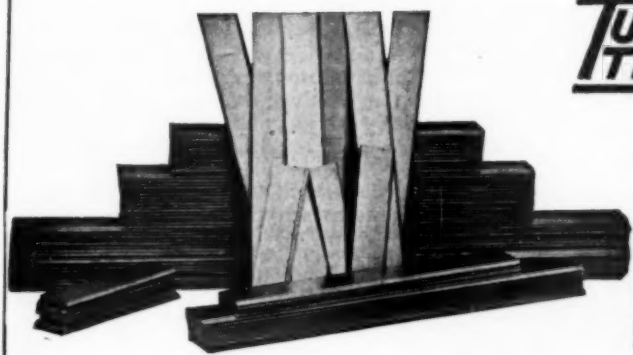
The operational controls of the new machine have also been redesigned so that they are more convenient, more

5 BASIC UNITS IN 1 PLURALITY

OILSTONE GRINDERS

With one Mummert-Dixon Plurality Oilstone Grinder you get (1) Coarse Oilstone Wheel, (2) Fine Oilstone Wheel, (3) Grinding Cone, (4) Leather Stropping Wheel and (5) General Grinding Wheel. Made in 3 sizes to meet every grinding and sharpening requirement in woodworking plants. Designed for hard and long usage. Efficient. Easily accessible. Investigate Mummert-Dixon equipment now. Send for informative literature today. No obligation.

MUMMERT-DIXON CO.
124 Philadelphia St., Hanover, Pennsylvania



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HIGH SPEED THIN KNIVES

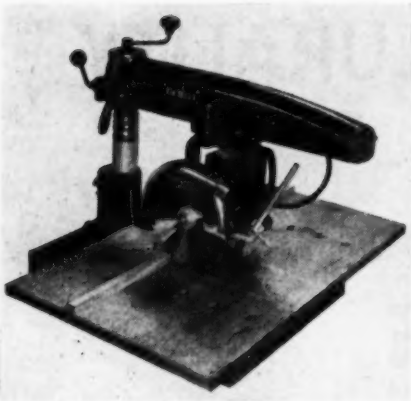
Stalter High Quality of workmanship and material is always reflected in increased production with less "down-time."

PROMPT DELIVERY

High speed thin knives are just one of the many Stalter products for the woodworking plant. For complete details,

WRITE FOR FREE CATALOGUE

STALTER EDGE TOOL COMPANY
GRAND RAPIDS MICHIGAN



easily visible to the operator and easier to manipulate.

The "Power Shop" line consists of two basic models, the MB and the GW. MB machines are available in ½ and ¾ h.p.; GW machines are made in ¾, 1, and 1½ h.p. models.

BIG BUSINESS IN CONVERSION OF WOOD WASTE

In the sawmill, lumber, plywood and veneer manufacturing plants, some are striking "pay dirt" in producing "chips" for the pulp and paper industry from materials which formerly were just waste. Often these waste materials actually presented a disposal problem and mills simply burned them up to get them out of the way.

Many mills are now setting up separate plants and equipment for converting slabs, edgings, trim, veneer cores and similar waste material into a valuable product for which there is a tremendous demand, particularly from the pulp and paper industry. Converting wood waste into chips is now adding a substantial profit to these mills.

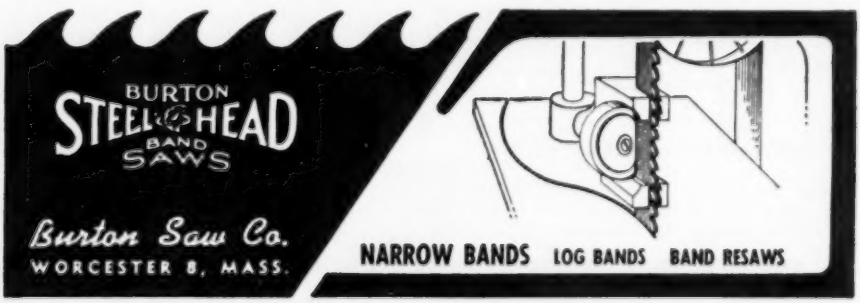
The equipment required for manufacturing chips is comparatively simple. Usually nothing more than a chipper and a "debarker" machine are needed to make uniform chips for shipment to pulp and paper mills.

However, as the Hanchett Manufacturing Company, Big Rapids, Mich., points out, the importance of maintaining sharp, properly conditioned chipper knives can scarcely be overemphasized. The chippers and the barking machines are definitely dependent upon proper conditioning of the knives to deliver maximum performance and a good quality of chips.

The Hanchett heavy duty grinders are specifically built and designed in a complete and wide range of models to meet the individual production requirements of mills interested in successful chip production.

WOOD TURNING MACHINE

Notable addition to the Hawker Manufacturing Company's line of precision woodworking tools is the Model 1000 wood and plastics turning machine. An efficient and economical woodworking machine tool—this Hawker is a heavier, sturdier machine with many important new features.



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CIRCULATION DEPARTMENT

WHEATON, ILLINOIS

WOOD WORKING DIGEST

APRIL, 1953

READER'S SERVICE DIVISION

This insert (please note all four cards) is designed to help you obtain woodworking information. Any of these cards mailed to our Service Division will receive careful attention. There is also a form within the book for shop problems, used machinery, etc. Let us know when we may be of service to you. No obligation.

Please send information on PRODUCTS and SUPPLIES described on the following pages:

....

....

Name..... **Position**.....

Company .....

Street .....

City..... **Zone**..... **State**.....

PRODUCT INFORMATION

A quick, free way to obtain information about the equipment and supplies you need to buy.

- Abrasives
- Adhesives, animal
- Adhesives, casein
- Adhesives, phenolic
- Adhesives, resin
- Adhesives, resorcinol
- Adhesives, urea
- Air Compressors
- Band Saw Tires
- Bits, auger
- Bits, dowel
- Bits, router
- Bleaches
- Bolts
- Boring Machines
- Car Pullers
- Chisels
- Clamp Carriers
- Clamps
- Conveyors
- Cutters
- Dimension Stock
- Dowels
- Drill Attachments
- Drill Presses
- Drills
- Dry Kilns
- Dryers
- Dust Collecting Equipment
- Electric Swede
- Fasteners
- Files
- Fillers
- Finishes
- Glue Equipment
- Gluers, electronic
- Grinders, knife
- Grooves
- Guards
- High Frequency Heating Equipment
- Hogs
- Jointers
- Knives, moulder
- Knives, planer
- Knives, shaper
- Knives, veneer
- Ladder Hoists
- Lumber
- Machines, beading
- Machines, box & crate
- Machines, carving
- Machines, clamping
- Machines, door and sash
- Machines, dovetailing
- Machines, dowel
- Machines, filing & sharpening
- Machines, gluing
- Machines, mortising
- Machines, nailing
- Machines, sawmill
- Machines, saw setting
- Machines, screw driving
- Machines, stapling
- Matchers
- Moisture Meters
- Mortise chains
- Moulders
- Nails
- Packaging Material
- Paint
- Planers
- Planes
- Plywood
- Presses, plywood
- Putty
- Rasps, band
- Rippers
- Routers
- Safety Clothing
- Sanders, automatic stroke
- Sanders, belt
- Sanders, contour
- Sanders, disc
- Sanders, drum
- Sanders, endless bed
- Sanders, portable electric
- Sanders, spatial
- Sanders, variety
- Sandpaper
- Saws, arbor
- Saws, band
- Saws, chain
- Saws, cross-cut
- Saws, cut-off
- Saws, gang
- Saws, portable electric
- Saws, radial
- Saw blades
- Saw blades, band
- Saw blades, carbide
- Saw blades, circular
- Saw Guides
- Screws
- Shapers
- Shaper Cutters
- Spray Equipment
- Stackers, lumber
- Surfacers
- Tackers
- Tenoners
- Transfer Cars
- Trucks, dry kiln
- Trucks, factory
- Unstackers, lumber
- Veneer Clippers
- Veneer Dryers
- Vises
- Washers
- Wheels
- Wood Treating Compounds

Data will come direct to you from responsible manufacturers. Your request involves no obligation.

Name..... **Position**.....

Company .....

Street .....

City..... **Zone**..... **State**.....

WOOD WORKING DIGEST

CIRCULATION DEPARTMENT
WHEATON, ILLINOIS

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To receive WOOD WORKING DIGEST regularly, fill in below and mail this card today.

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Name..... Position.....

Company ..... No. of Employees .....

Street .....

City..... Zone..... State.....

Products .....

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Without obligation please send more information and literature on the items shown on the pages indicated from the _____ issue of WOOD WORKING DIGEST.

Product	Page No.

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READERS' SERVICE DIVISION

WHEATON, ILLINOIS

Variable feed and cutter head speed controls enable selection of best speed combinations for type of stock and surface desired, we are told. The manufacturer, Hawker Manufacturing Co., 1425 Keowee St., Dayton 4, Ohio, says that the new, self-centering and equalizing stock guide eliminates costly chatter and vibration; new, blower-type shaving hood exhausts all chips from hood; new, redesigned drive system eliminates the clutch and many costly gears and shafts, reduces lubrication and maintenance costs.

ONSRUD VACUUM PULLEY

The outstanding efficiency of the Onsrud vacuum pulley was demonstrated recently by engineers of the Onsrud Machine Works, 3947 Palmer St., Chicago, Ill. In employing the vacuum pulley on Onsrud woodworking and metalworking machines, the Onsrud Machine Works, Inc., has always claimed that the assembly resulted in longer belt life and full transmission of drive motor speed to spindle. Onsrud engineers graphically proved this claim in an engineering study that compared the performance between an Onsrud vacuum pulley and a standard steel pulley.

In a test, a standard 2 h.p. motor was used, and a constant full load was applied to the belt driven spindle. Full

NEW Tenoner

★ Simplified design ★
Combination Tenoning & Coping Heads

★ Quick set-ups ★
Heavy-duty direct-drive
3 H.P. Motors

★ Up to 9" long tenons ★

Built-in check-rail Slotter

FESTO WOODWORKING MACHINES
745 - 51st St. Brooklyn 20, N. Y.

Nutting

Most Complete Line of Floor Trucks in America

Figure 321—Lumber Buggy. Large wide tread wheels for outdoor as well as indoor use.

Figure A—Balance style ming sharp cor- Variety of super- structures and wheel sizes.

Figure 1191—Timber Dolly. Used as a dolly or, inverted as a portable roller.

Figure 1419 and 421—

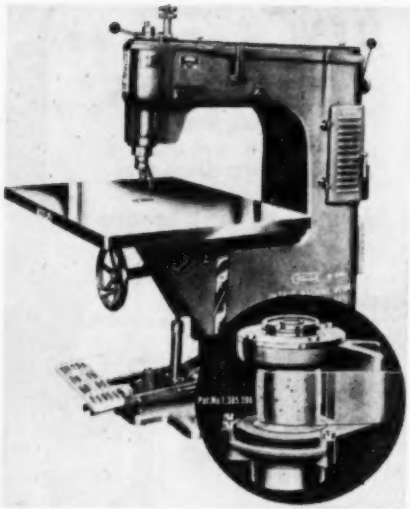
Jacks and Skids. Stores and transports materials with one-time handling. One Jack services many Skids.

WRITE FOR FREE LITERATURE

SINCE 1891 NUTTING TRUCK & CASTER CO.
1127 Division Street • Faribault, Minnesota

transmission of drive motor speed provided a spindle speed of 18,250 r.p.m. Each type of pulley was individually tested, using the same equipment, beginning with a belt tension of 50 lbs. Nature of the test was to reduce belt tension in stops of one-half pound and to read spindle speed at each step. As the graph shows, with the standard solid steel pulley, full transmission of speed was only obtained with the belt at 50 lbs. tension, and that speed was reduced sharply as tension was lowered, with the spindle stalling at slightly over 38 lbs. tension. With the Onsrud vacuum pulley, transmission of speed remained constant until tension was reduced to slightly under 35 lbs. At 29 lbs., spindle speed was still 17,000 r.p.m. At slightly below this point, the test had to be terminated, due to the extreme slackness of the belt, which caused it to continuously strike against supporting castings which were a part of the test assembly.

The hub of an Onsrud vacuum pulley is built with a series of perforations or holes to provide a means of exhaust for the infinitely small layer of air that tends to be drawn in between belt and pulley. On the Onsrud vacuum pulley this air layer is relieved through the perforations, and escapes through exhaust channels. Because of this design feature, full friction contact between belt and pulley is maintained even at relatively low belt tensions. With standard solid steel pulleys, the air layer can only be eliminated at high belt tensions, and immediately causes slippage when belt tension is reduced.

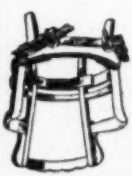


MAX 20"
DISC SANDER AND GRINDER

For outstanding performance and years of trouble-free service this new MAX 20" disc sander is a fitting mate to the famed 16" model. Table tilts from 45° up to 45° down, with finger-tip stop that returns it to right angle. For large surfaces table lowers to clear disc, still tilting to 45°. No holes necessary in abrasive cloth or paper. Disc easily and quickly removed. Bolting to floor unnecessary due to fine balance and cast iron base. Write for circular.

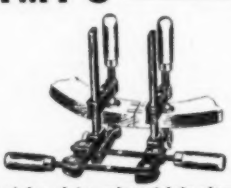
MAX MFG. CO.
138 Stockton Avenue San Jose 26, Calif.

"HARTFORD" CLAMPS



Designed especially for barrel and irregular chair frames. Holds securely. Handled by one man.

Style 5: For interior woodworking, body building, furniture, sash and door manufacture. Rapid action tailpiece. Quickly adjusted. 32 Clamp Styles Available. Write for free Catalog Today.



Used for gluing where triple clamping is required on irregular shapes.

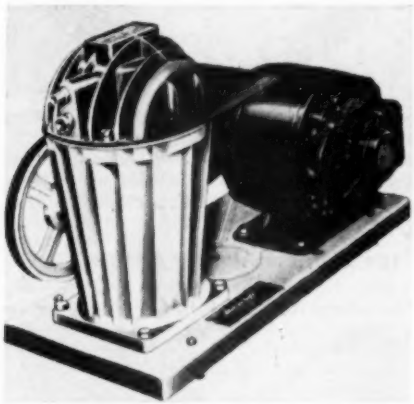
The HARTFORD CLAMP COMPANY EAST HARTFORD, CONN. Est. 1915

PORTABLE SPRAY UNIT

A new portable paint spray unit that will deliver 3.1 cu. ft. of air at 40 lbs. has recently been announced by the Sharpe Manufacturing Company, E. Pico & Wall St., Los Angeles, Calif.

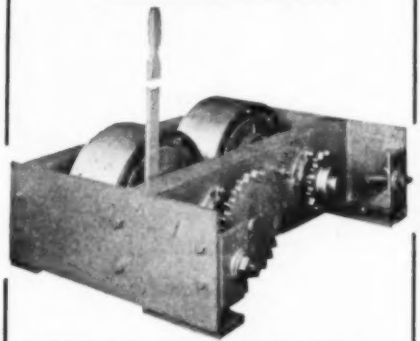
The Sharpecraft "40," developed by Earl Briggs, chief design engineer for Sharpe, will deliver more air from a 1/3 h.p. unit than any similar unit now being sold, it is claimed.

This substantial increase in air delivery is due to changes in design of the valve plates and improvements in valve plate materials.



The Sharpecraft "40" also features additional important changes, including: a longer stroke; a connecting rod lock; and an enlarged safety valve, which permits greater ease of air regulation to lower pressures when this control is advantageous.

NEW ENTERPRISE FEED WORKS



- Clutch type: No frictions, no belts
- 20 hp capacity
- Easily-installed on all Model 34 Sawmills

THE ENTERPRISE COMPANY
SUBSIDIARY OF WM. K. STAMETS COMPANY
MACHINERY BUILDERS & ENGINEERS
PITTSBURGH
Columbiana, Ohio, U.S.A.

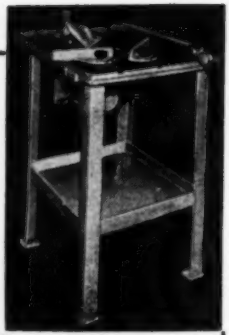
QUALITY
BASS WOOD
LUMBER CORE
TO YOUR SPECIFICATIONS

GLUED-UP DIMENSION
IN
BIRCH OR MAPLE

EXPERT KILN DRYING

PHONE, WIRE OR WRITE

ALL-WOOD MFG. CO.
BAYFIELD, WIS.
PHONE 141



New
TILTING
ARBOR
SAW

The King *of Quality*

The new 8-inch Tilting Arbor Saw by H & A is truly "The King of Quality!" Heavy cast iron table. Life sealed ball bearings. Motor that tilts with the saw - to assure complete alignment of parts at all times. Here's a saw that is built for continuous use all day long, every day! It's the choice of woodworkers who insist upon quality. WRITE TODAY! Write for FREE literature, name of nearest authorized dealer.

HESTON & ANDERSON
Division of ST. PAUL FOUNDRY & MFG. CO.
11-11D FAIRFIELD, IOWA

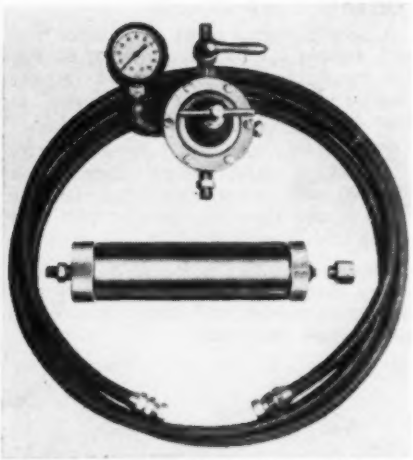
Other features that are noticeably above standard for portable equipment, are: an oilless compressor featuring three new Departure ball bearings; a large head expansion chamber for smooth air-flow; and a heavy duty diaphragm assuring longer service.

NEW BABY

The John P. Fox Company, 5514 York Blvd., Los Angeles 42, Calif., announces the addition of a new baby to the FF glue gun assemblies and accessories family. Although just recently born, it is growing rapidly and doing fine. It is expected that it will grow to be quite a large baby in a very short time.

The new addition is called the FF dual assembly and it is a handy glue gun assembly with a capacity of 16 oz., a pressure gauge, regulator, valve and 10 ft. of air hose with connectors attached. Care of the gun is simple as there are no tanks nor fluid hose for cleaning.

The FF dual assembly is already serving the industry in two very important phases. First, those who are using catalyst mixed compounds with predetermined pot life; second, for those uses of limited gluing or interrupted operation irrespective of the type of glue used.



CIRCULAR SAW SHARPENER

The Speed Corporation, 3420 S. W. Macadam Ave., Portland 1, Oregon, is offering a Speed Circular saw sharpener to the trade. The sharpener can be clamped to the work bench and the job of filing begun. We are told that it takes about 20 to 30 minutes to complete the job.

Crosscut hollow ground combination end rip saw blades can all be sharpened. The sharpener comes with a three cornered file, four mandrels and detailed working instructions.

FOR SALE

McKnight No. 28 Double End Borer and Cut-off Saw; with 3 adjustable heads and cut-off saw at each end; all direct motor drive—550 volt.

WILLIAM H. FIELD CO.
327 Dorchester Ave. Boston 27, Mass.

WANTED
SALES ENGINEER

Large manufacturer of hardboard needs man with experience adaptable to sales promotion work in the field of customer fabrication of hardboard. Duties would generally fit in with merchandising hardboard and would partly consist of educational work with potential customers regarding fabricating equipment necessary, fabrication procedures, know-how, etc. This is a lifetime career opportunity. Headquarters in Chicago. Write full details, including age, education, experience. Your reply will be held confidential.

Address replies to Box 815, c/o WOOD WORKING DIGEST, WHEATON, ILL.

Towsley INDUSTRIAL FLOOR TRUCKS — *for Every Materials Handling Purpose*

NO. 327
The favorite truck of the woodworking and furniture industries. Hardwood body and stakes, steel tie rods used in frame, welded steel post sockets.

TOWSLEY TRUCKS in your plant mean greater ease in handling materials . . . greater economies.

To your specifications, your requirements, your satisfaction each Towsley Truck is engineered for versatile performance, quicker loading, smoother wheeling, easier steering, heavier pay load, greater manpower conservation.

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TOWSLEY TRUCKS, INC.
1760 ELMORE ST., CINCINNATI 23, O.

STOP DUST

DUSTKOPS — **20 Models**
UNIT TYPE — 300 to 3600 cfm
LOW COST — ¼ hp to 5 hp

AVAILABLE FROM STOCK

For: Grinders, buffers, polishers, woodworking, lint . . . All Dusts.

Send for Cat. 605a; describe problem.

AGET-DETROIT CO. • ANN ARBOR, MICH.

IMPROVED Ball Bearing Shaper Collars

Friction between collar and pattern entirely eliminated — no more burning.

Outer rim is independent of the slotted collar and revolves with the feed of the work.

Collars can also be supplied without grooves for use with solid steel cutters.

Give diameter of collar and size of hole.

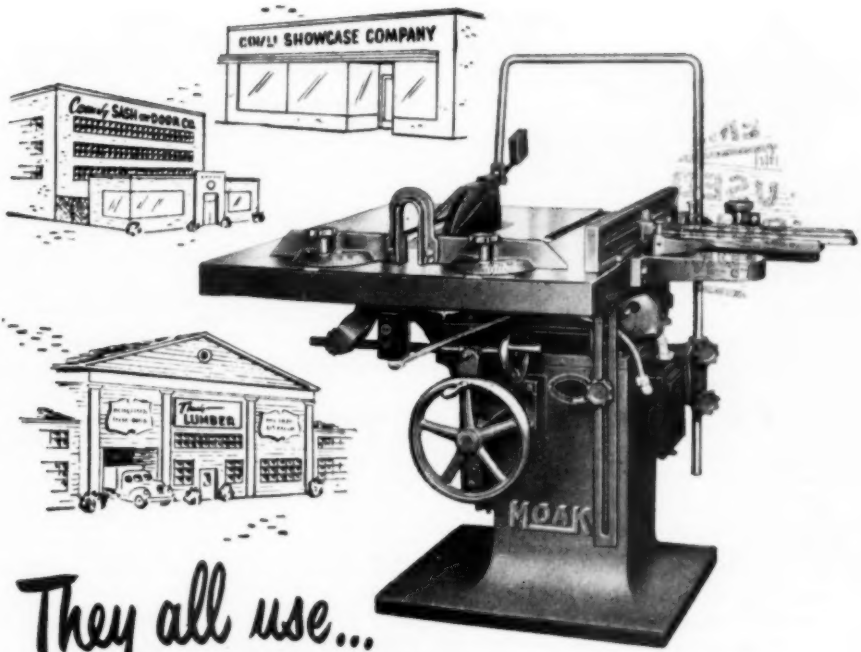
GUSTAFSON & SCOTT MFG. CO.
1637 Lowell Avenue Chicago 39, Illinois

Mechanics Through The Ages

THE BLACKSMITHS of MEDIAEVAL ENGLAND WERE FORBIDDEN TO WORK AT NIGHT BECAUSE THE LIGHT, HEAT, SMOKE AND NOISE WHICH EMANATED FROM THEIR SHOPS KEPT THE NEIGHBORHOOD AWAKE!

BRITISH WORKERS RESENTED THE AUTOMATIC GEAR-CUTTER WHEN IT WAS INTRODUCED INTO MANCHESTER, ENGLAND, FROM AMERICA . . . THEIR UNION PASSED A DECREE THAT A MAN MUST BE PLACED AT EVERY MACHINE.

BEFORE 1850 ALL GOVERNMENT FIREARMS IN ENGLAND WERE MADE ON THE "CUT-AND-TRY" METHOD: THAT IS —ONE COMPANY MADE BARRELS, ANOTHER LOCKS, A THIRD STOCKS AND SO ON THROUGH THE LIST OF PARTS WHICH WAS THEN TAKEN TO THE TOWER OF LONDON WHERE BY FILING ONE PIECE, CLIPPING ANOTHER, CUTTING ANOTHER, EVENTUALLY PARTS WERE FOUND THAT WOULD FIT TOGETHER SATISFACTORILY.



They all use...

Moak All-Purpose Saw Tables

TO CUT BOTH HEAVY MILL JOBS AND FINE SHOP WORK WITH UNERRING PRECISION

Capacity for cutting stock up to 5⅜" thick and accuracy for fine work are both available in this one machine—the Moak No. 16-A All Purpose Saw Table. Functionally designed throughout for efficient operation, Moak Tables raise, lower, or tilt at a turn of a hand wheel. Accurately graduated cut-off gauges adjust in V-slots machined in the polished semi-steel table; rip fence has rack and pinion adjustment. Choose from two models, three drives.

Get the facts on Moak Saw Tables right away. Write for our colorful booklet.

MOAK MACHINE & TOOL CO.
MOAK
PORT HURON, MICHIGAN

The Market Place

Rates for Classified Advertisements

Lists of Used and Rebuilt Machinery, either For Sale, Wanted, or For Exchange, set in uniform style, will be published in the Classified Section at the rate of $7.50 for name and address and a five line advertisement. For additional lines, only 75c per line.

DISPLAY ADVERTISEMENTS: 1 inch (Minimum), $8.50; 2 inches, $17.00; 3 inches (Maximum), $25.00.

Write directly to those offering the machine for sale, for prices and full descriptions. If what you seek is not advertised, write Hitchcock Publishing Company, 222 E. Willow Ave., Wheaton, Ill. making known your wants on either new or used machinery and the publisher will gladly assist you.

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Yates No. 431, 43" 3-drum end. bed, M.D.
Pearson Spindle Sander., M.D.

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Buss double cabinet type, M.D.
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Greenlee No. 426 Roll Feed with motor

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Loeffler No. 669 Osc. Spindle, B.B., M.D.
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Wysong & Miles 6-Spindle No. 268 Mortiser
New Northfield Single Chain Saw Mortiser

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Vonnegut 4" electric Moulder
Yates-American 4" Type C-88 Electric Moulder
Woods 6" No. 134M Electric Moulder
Newman 6" No. 46 Electric Moulder
Yates-American 12" C-89 Electric Moulder
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Whitney 36" Single Planer

DOUBLE PLANERS
36" Oliver Straightoplane
Buss 36" Double Planer
Yates-American 30" No. 177 ball bearing, direct motor driven with electric grinder
Whitney 30" and 36" No. 24 direct motor driven, ball bearing, with grinder and jointer

SANDERS
Yates 43" No. 431 Endless Bed Sander
Yates American 49 inch S-33 Endless Bed Sander
Mattison No. 124 Automatic Stroke Sander
Wysong & Miles 8' No. 294 Automatic Stroke Sander, Direct Motor Driven, Ball Bearing
Pearson Waterfall Sander
Oakley Semi-Automatic Stroke Sander
Oakley Model H drawer Sander
Nash No. 50 and No. 25 Turning Sander
McKnight Chair Back Post Hard Drum Sander

BAND SAWS
36" Yates-American Motor Driven Ball Bearing Hand Saw

CUT-OFF SAWS
Mereen-Johnson No. 300 Double Cut-Off Saw
Wilkin-Challoner Chain Feed Double Cut-Off Saw and Panel Sizer
Yates-American No. 51 Direct Motor Driven Swing Saw

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Eaglesfield Direct Motor Driven Ball Bearing Rip Saw
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American No. 15 Ball Bearing Chain Feed Rip Saw
Yates-American G-67 Chain Feed Rip Saw

ROUTERS
Yates-American U-9 Electric Router

SHAPERS
Whitney No. 251 Double Spindle Electric Shaper
Whitney No. 234 Double Spindle Electric Shaper
Onsrud W-125 Double Spindle Automatic Shaper
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Planers, Dble.: Whitney 30 x 7" with mtrs.
Planer, Dble.: Yates No. 186—30 x 6" M/D. long bed
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Resaw, Band: Mershon 54" New Standard with motor
Moulder: Yates-American No. C3A-4" B.B. M.D .
Rip Saw: XL Ripper with 10 HP motor
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Tenoner: Dbl. End Wilkins-Challoner 120" with copes
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* Greenlee No. 386 3-ft. Vert., Multiple Borer.

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* Amerioan No. 1, 16-in. hand jointer.
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* Jenkins No. 343-A glue jointer.
* Diehl No. 60 glue jointer.

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* Woods No. 144M, 2-head electric moulder.
* Vonnegut 6-in. electric moulder.
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* Woods 134BM 10-in. 5-head moulder.
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* Stetson-Ross 36A end matchers.

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* Whitney No. 29—36-in. single planer.
* Whitney No. 24—30-in. and 36-in. double planer.
* Whitney No. 33 32-in. heavy duty double planer.
* Greenlee No. 120 30" double planer

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* Porter No. 600 and 610 heavy duty elec. routers.

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Yates No. 431—31, 43-in. 3-Dr. end. bed mtrzd.
* Solem S 3-M 73-in 3-drum endless bed sander
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* Wysong & Miles No. 294 auto. stroke sander.
Mattison No. 124 auto. stroke sander.
* Wysong & Miles No. 171 hand block belt sander.
* Mattison No. 138 hand block belt sander.
Nash No. 25 and No. 40 auto. spindle sanders.
* Pearson Model A moulding sander.

SAWS—Band Scroll & Resaws
* Tannewitz Type G, 36-in. band scroll saw.
* Fay & Egan No. 50—36-in. band saw.
* McDonough 44-in. vertical band resaw.

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* NEW Beach No. 599 auto. cut-off saw.
* Porter 43-20S straight-line cut-off saw
* Yates-American G-44 straight line cut-off saw.
* Jenkins No. 105-A dbl. cut-off and mitre
* Bell 12A and 12B double cut-off and miter saws.

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* Mattison 202 & 207 straight line ripsaws.
* Yates-American G-77 straight line ripsaw.
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* Bell No. 11 power door clamp.
Millbury Pocket Cutter.

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* Eaglesfield tilting arbor variety saw.
* Fay & Egan No. 500 tilt-table variety saw.
* Baker double arbor variety saw, b.b.

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* Onsrud No. 248 single spindle shaper BMD.
* Porter No. 103 single spindle shaper.
* Porter No. 201 double spindle shaper.
* Whitney No. 8 double spindle shaper, b-m-d.
* Whitney No. 351 double spindle, 12½ HP motors
* Whitney No. 295 automatic, double spindle shaper
* Onsrud No. 125B automatic single spindle shaper.

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* Jenkins No. 95—96-in. double end tenoner.
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Mattison No. 55C Ball Brg. Auto. Turning
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Wysong & Miles No. 284 P.F. Hollow Chisel
Fay & Egan No. 462 P.F. Hollow Chisel
American No. 20 P.F. Hollow Chisel
MOULDERS
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Smithway "XL" 4" Ball Brg., M.D.
Hermance 6" 4-Side, Motor Driven
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Y-A No. C44 Floor Type, with Table
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Diehl No. 55 M.D. Chain Feed Rip
Yates G-2 B.B. Chain Feed Rip
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Tannewitz SJ Tilting Arbor
American Dbl. Revol. Arbor
SHAPERS
Porter No. 200 SVM Single, M.D.
Whitney No. 165 D.M.D., Single
Porter No. 155 Serpentine Shaper
TENONERS
Colladay-Power-Fay Egan, Single End
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Salem S-3-M 49" Direct Motor Driven Ball Bearing Three Drum Endless Bed Sander
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Mattison No. 244 Direct Motor Driven Straight Line Cut Off Saw
Mattison No. 207 Direct Motor Driven Ball Bearing Chain Feed Ripsaw.
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Greenlee No. 495 Direct Motor Driven Tilt-ing Arbor Variety Saw
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Yates-Amer. No. 1 M.D., B.B. Variety Saw
Greenlee No. 356 Direct Motor Driven Vert. Single Spindle Borer
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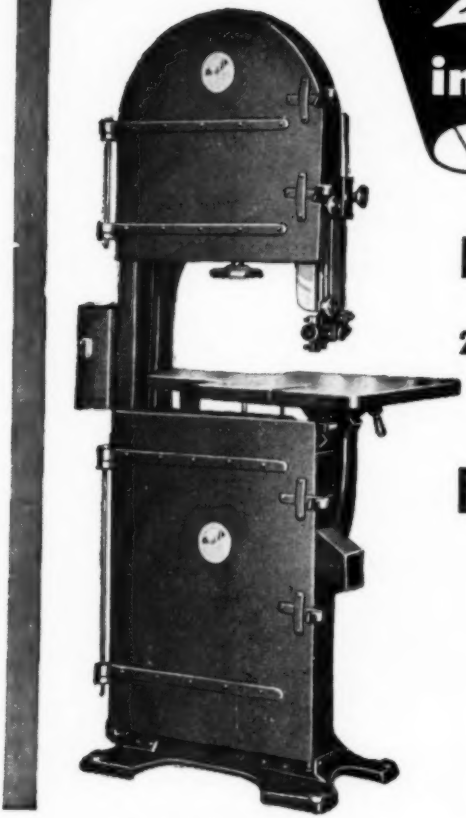

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NORTHFIELD, MINNESOTA., U. S. A.

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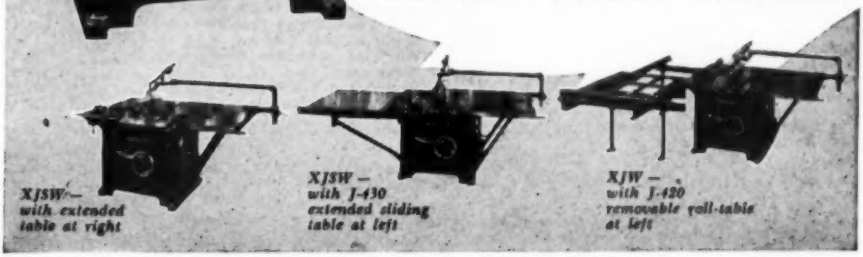

XJSW— with extended table at right

XJSW— with J-430 extended sliding table at left

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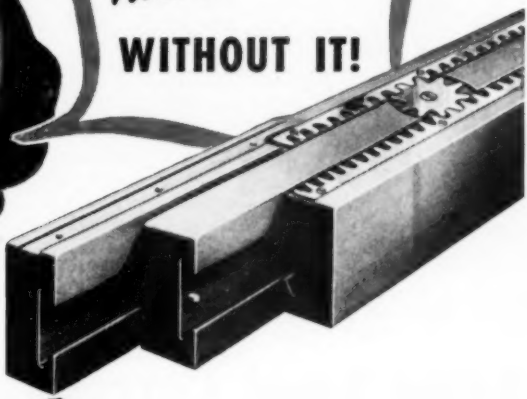
I wouldn't have a table

WITHOUT IT!



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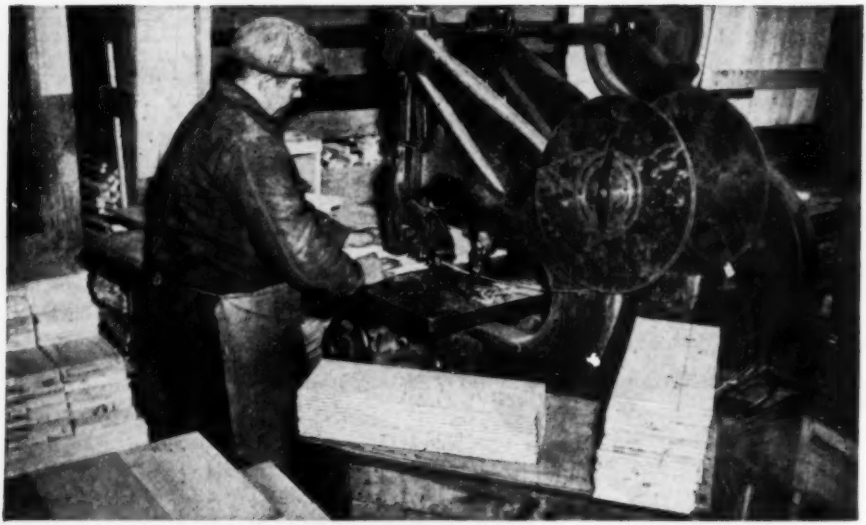
Walter of Wabash



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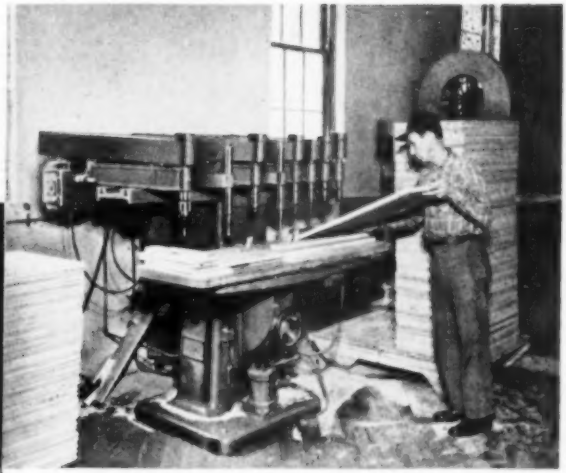
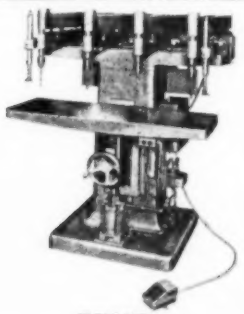


REAR VIEW



FRONT VIEW

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BORER

The big advantages of this machine are: Versatility, Easy Adjustment, Rigidity, Accuracy, High Production Efficiency, and Automatic Table Feed Cycle. Standard machine has four spindles and two spring hold-downs, each positionable forward, backward, or sideways as desired on two T-slot rails. Individual belted motor drive on each spindle can be turned on or left idle independently as needed. Machine can be set up for single or series operations, as shown in picture above. Also available with more spindles, two-spindle cluster heads, larger tables, longer mounting rails. Spindles in sleeve-bearing cluster heads can be furnished with as close as 5/8" center-to-center distance, while 1-1/8" is the minimum using ball bearings. Write for quotation, or see your ECCo representative.

CONDENSED SPECIFICATIONS

Spindle Motor Horsepower	1
Spindle RPM	3600
Work Table Size	16" x 48"
Minimum Center Distance between Spindles	2-1/2"
Spindle Chuck Capacity	0" to 1/2"
Maximum Clearance between Table and Chuck	10"
Adjustment of Spindle Arms (Front to Back)	14-3/8"
Vertical Knee Adjustment	6"
Maximum Table Stroke	4"
Adjustable Table Dwell (Loading Position)	3/10 to 60 seconds

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14" saw cuts 4" lumber
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Hardened wear-resisting track and chain blocks.

Yielding Gauge saves lumber and assures faster edging and ripping.

Patented saw jointing and side dressing device.

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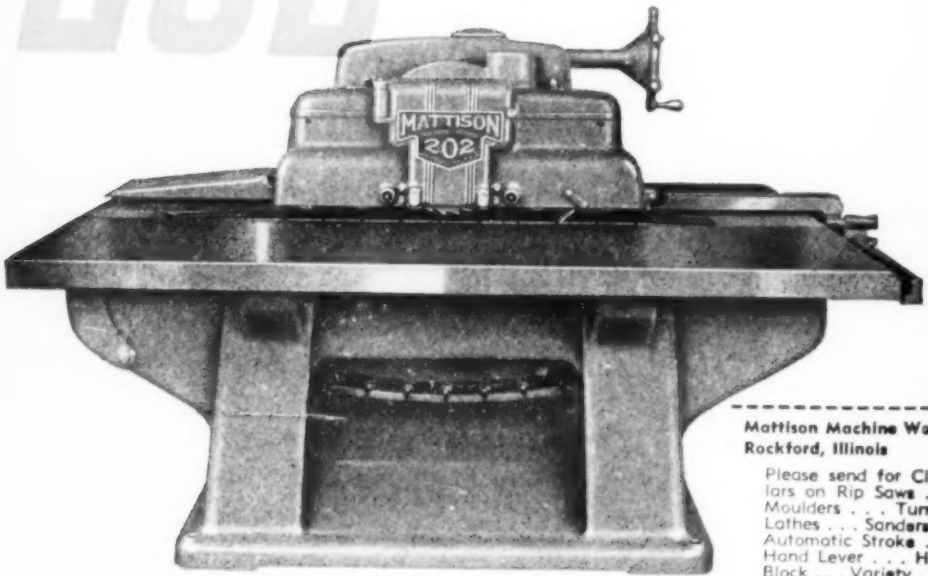

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